

THE IRON AGE

New York, December 2, 1926

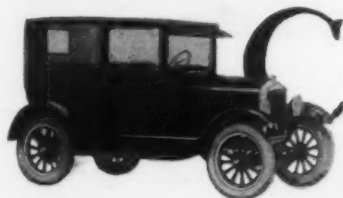
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Ford Open-Hearth Plant Unique

Features Include Multiple Teeming of Small Ingots,
Method of Stripping Molds and Handling
of Slag

BY F. L. PRENTISS*



COMPLETING in large part its steel plant building program started several years ago, with a view to making in its own works, from its own iron ore and scrap, a large proportion of

the iron and steel used in its own products, the Ford Motor Co., Detroit, recently placed in operation at its Fordson plant its new open-hearth unit, soaking pits and 42-in. and 32-in. continuous blooming and billet mill. The first unit of its steel works, a 14-in. merchant bar mill, was placed in operation late last year. This was described in THE IRON AGE of Jan. 21 last.

The open-hearth plant has a number of interesting features, both in arrangement and practice, including the small size of ingots made, the method of pouring and stripping the ingots, the way slag is handled and the arrangement of the stockyard, which is on the ground floor level, or the same level as the pouring side, instead of having the usual high line on which scrap is brought in on tracks on a level with the charging side.

There are four 100-ton basic furnaces of the tilting type, with space provided for six additional furnaces. The tilting type of furnace was chosen with a view to using either the duplexing or straight operation process, this type of furnace permitting the pouring of only a part of a heat at a time, if desired.

Supply of Raw Materials

The stockroom bay, 66 ft. wide, is served by one railroad track extending its entire length and two

*THE IRON AGE, Cleveland.

10-ton and one 15-ton electric traveling cranes. Scrap is piled along the outer side of the bay. At the lower end of the stockyard are four shears—two Pels shears, a 1000-ton hydraulic shear and an alligator shear for cutting up the scrap from the 199 vessels purchased by the Ford company from the United States Shipping Board. The large hydraulic shear was provided to cut up the large sections of steel plate scrap from the ships to a size that can be handled by the smaller shears.

Extending from the adjoining bay into the stockhouse is a balcony 21 ft. wide on a floor level with the charging bay, on which most of the charges are made up. Scrap brought in on cars from the Ford plants is unloaded direct from the cars to the charging boxes with the electric traveling cranes and lifting magnets.

Scrap sheared up in the stockhouse is loaded into charging boxes at the side of the shears and a crane lifts four of these boxes at a time—a charging car load—by means of a specially designed sling, and places them on a charging buggy on the balcony. Under this balcony, on the ground floor level, is a track for bringing in brick and other supplies used in construction and repair work.

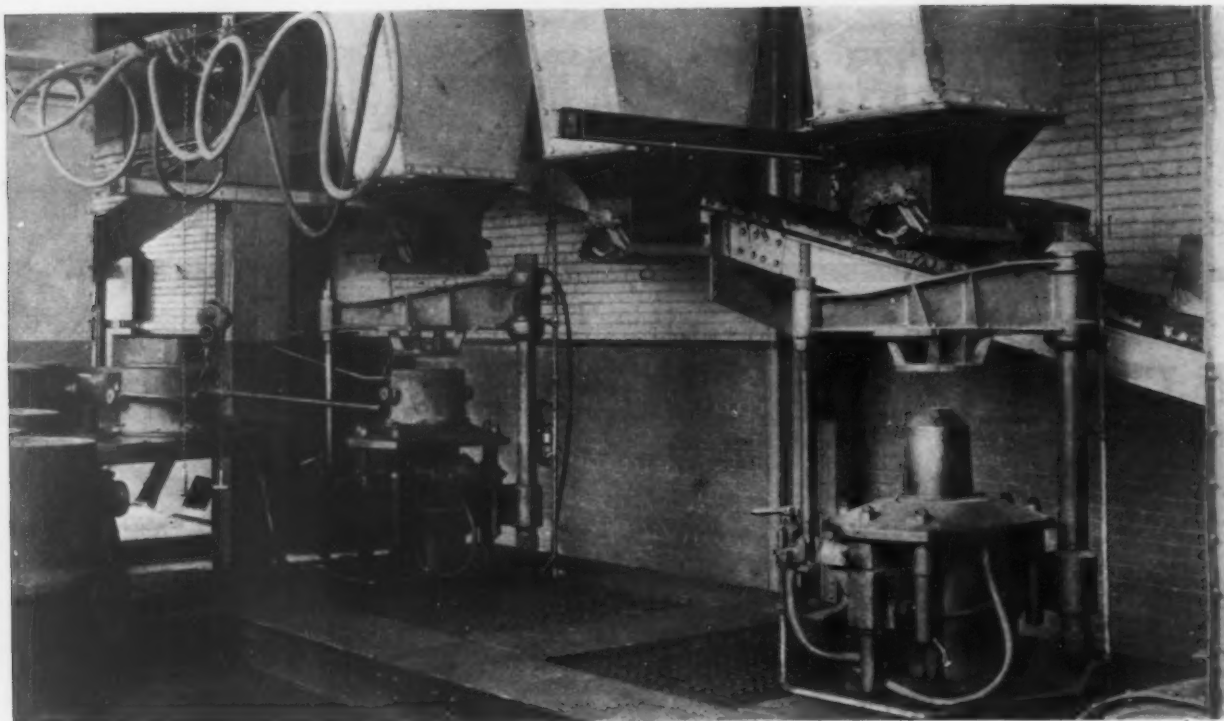
The charging box cars are of light construction, have cast steel tops and are equipped with roller bearings. There are two standard-gage tracks on the balcony, and from these three switch tracks run across the charging floor and connect with a track located in front of the furnaces, on which the charging buggies are spotted in front of the furnace doors. An electric locomotive of the storage-battery type is used for hauling the buggies from the balcony to the furnaces.

At the back of the charging floor a track runs the length of the building to handle the hot metal from the mixer. The charging floor is served by a 125-ton ladle

Innovations Are Noteworthy in Ford Steel Works

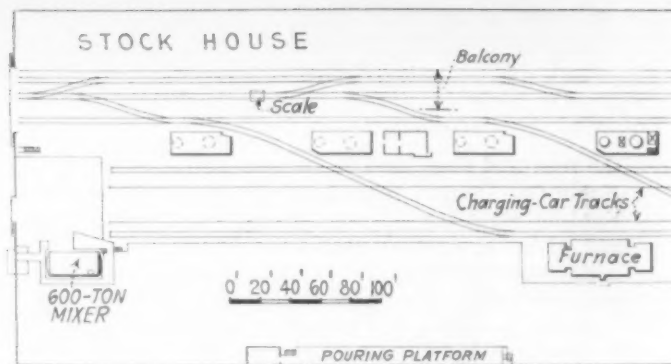
MANY unusual features are to be found in the new open-hearth plant of the Ford Motor Co., described in this article. Another series of new departures features the blooming mill plant, to be described next week. In both cases progress is indicated in the art of designing steel-mill equipment.



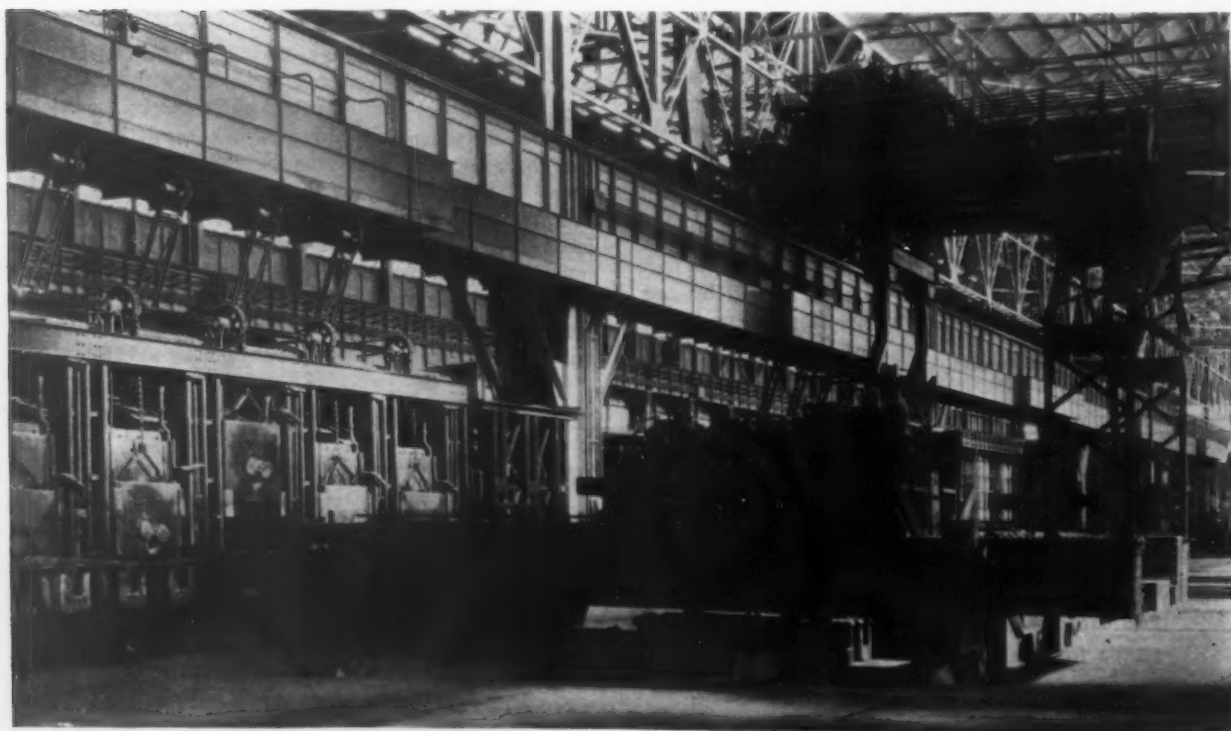


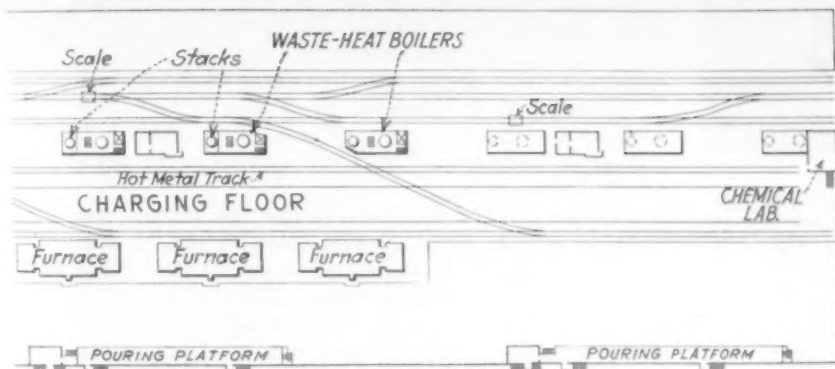
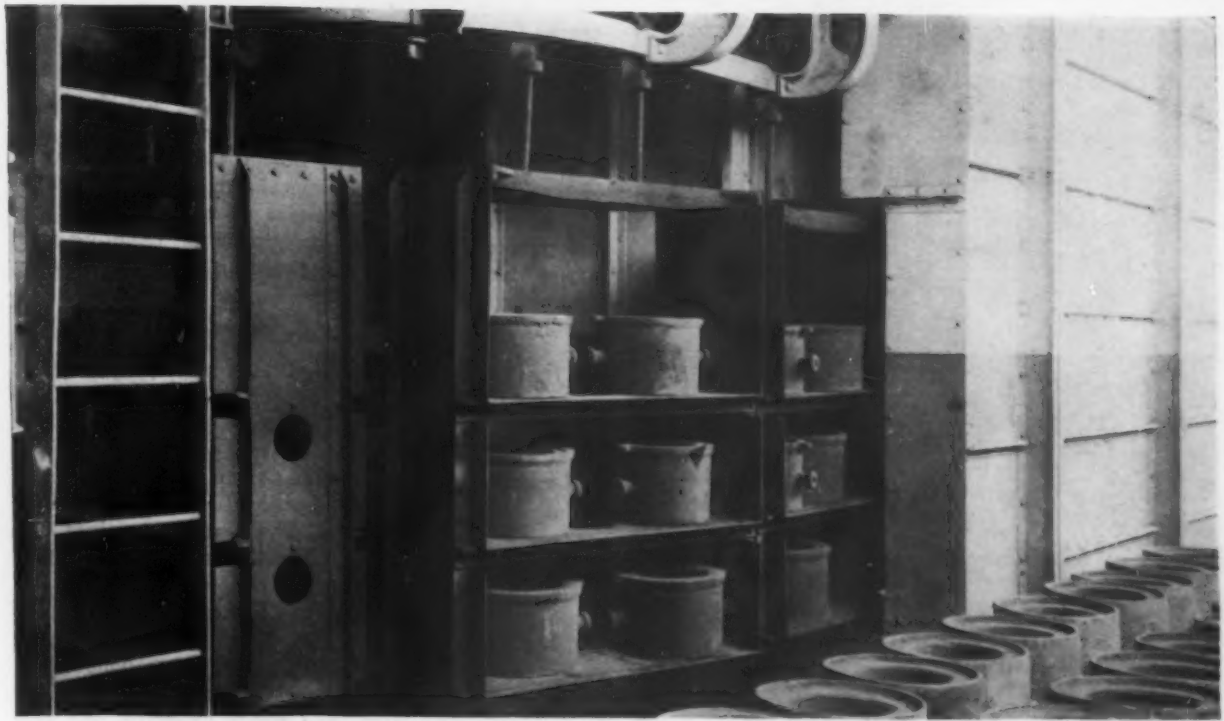
Hot Tops Are Made From Waste Foundry Sand on the Jar Ram Molding Machines Shown. The sand, reconditioned after use, goes back to hoppers above the molding machines, for re-use

Furnaces of the Tilting Type, Electrically Controlled. The door-operating mechanism is located on a platform above the furnace front. A track extends the length of the charging floor, back of the charging machine, for handling hot metal from the mixer. Beneath the charging machine appears the shallow metal pan in which furnace repair materials are handled



General Layout of the Open-Hearth Building, Indicating 1068 ft. long and 243 ft. wide. The stockhouse balcony is floor. Switch-overs are numerous

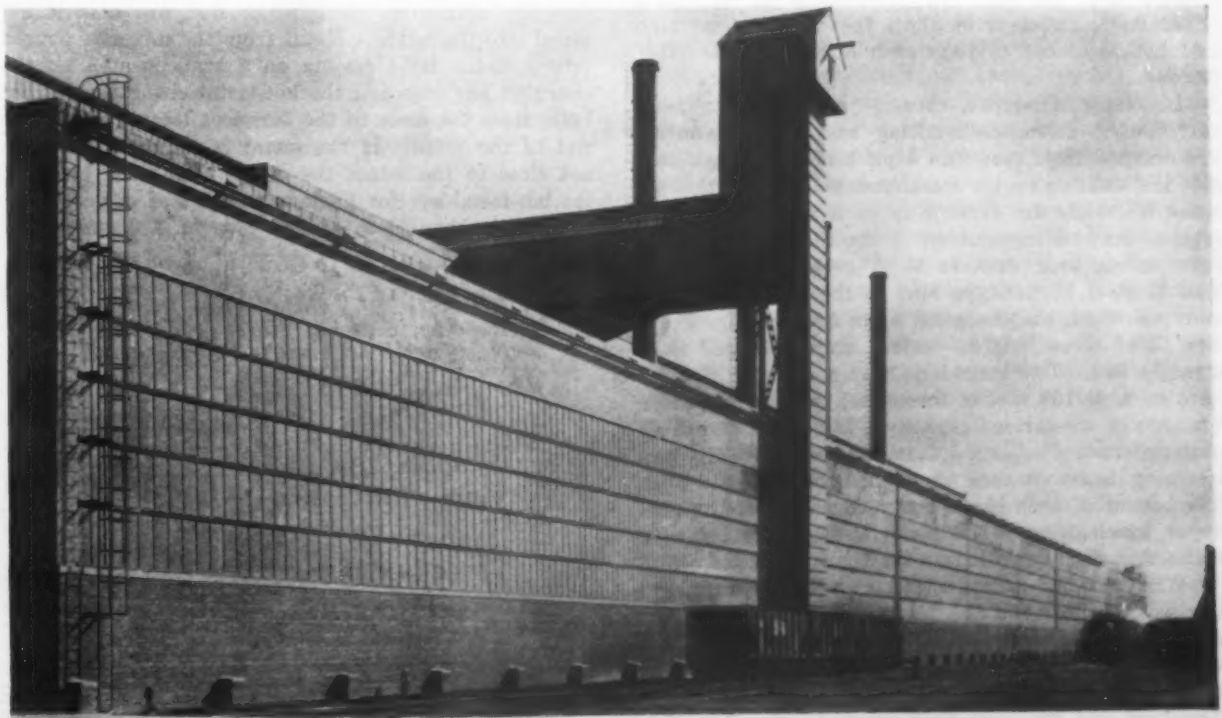


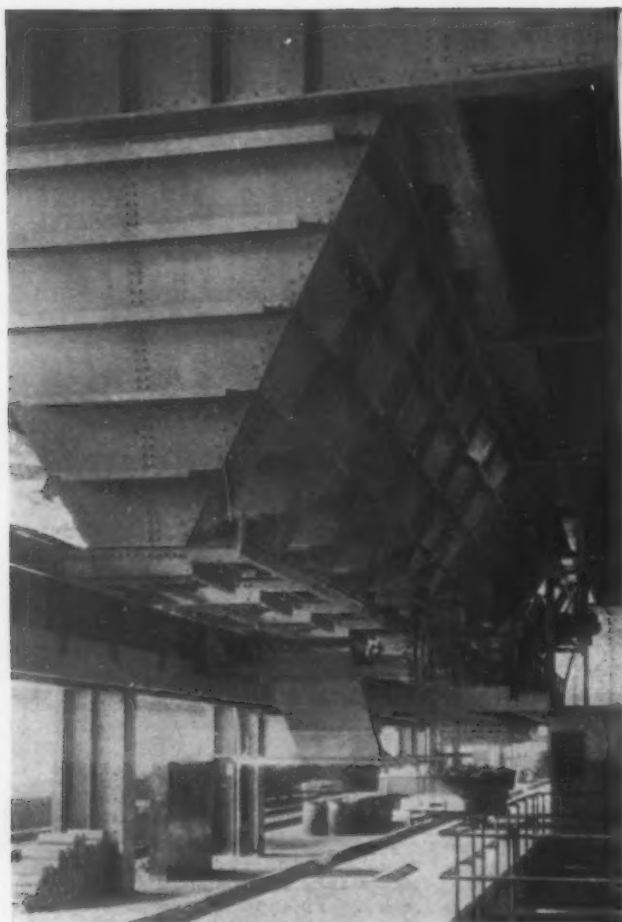


Provision for Expansion from Four Furnaces to Ten. The building is commanded by the stockhouse cranes and is on the level of the charging in the charging buggy tracks

Hot Tops After Molding Are Dried for Two Hours in a Continuous Conveyor Type Oven. They then are carried by a conveyor to the ingot pouring floor, where they are mounted on the molds. This view shows the flasks that are mounted on the ingot molds with the hot tops

Limestone, Fluorspar, Ferroalloys and Other Materials Used in the Open-Hearth Furnaces and in Repair Work Are Dumped into a Pit at the Side of the Stockhouse, and Carried Above the Roof by a Skip Hoist. This discharges into a conveyor which delivers the material into hopper type bins





Some of the Bins—A Part of the Convenient System for Handling Open-Hearth Materials Other Than Scrap. Limestone, fluorspar, ferroalloys, etc., are dumped from these bins through feeder conveyors into charging boxes on cars on a track beneath the bins. The conveyor, controlled from the floor, appears, just above the barrels

crane, which will handle the metal from the mixer to the charging doors of the furnaces, and with a 5-ton low-type charging machine. Current is carried to the machine, from a power line at the side of the building columns, through a trolley on a cantilever bridge extending from the machine. The charging bay width of 72 ft. is sufficient to allow the charging machine and hot-metal car to pass each other without interference.

Limestone, fluorspar, chrome ore, ferromanganese, ferrosilicon, dolomite, Syndolag and other materials are dumped from cars into a pit beneath a track outside the building on the stockhouse side. From this pit these materials are carried up on a skip hoist to the level of the building trusses. From the end of the skip hoist a conveyor delivers them over the stockhouse roof to steel hopper-type bins at the side of the balcony on which the charging boxes are loaded. There are 13 of these bins in various sizes arranged in a straight line. Two large bins have a capacity of three cars each, or 100 tons of limestone; the eleven smaller bins are of one-carload capacity. Limestone and other materials are discharged from the bins directly into charging boxes on cars on a track beneath the bins. The bottom of each bin is equipped with a feeder conveyor which delivers the material from the bin to a chute that discharges it into the charging boxes.

With the bin arrangement, shoveling of material is almost entirely avoided, being confined to alloys that are used in small amounts. The track beneath the bins inter-connects with the tracks on the charging box balcony. A train of cars is run under the bins for limestone and the cars then proceed over the other

tracks for scrap. There are three scales in the track, for weighing the scrap and limestone.

Small stock bins are located at the side of the charging floor opposite each furnace, for fluorspar, ferroalloys and material for repairing bottoms. All material that is being used during furnace repair work is kept in a shallow sheet metal pan 8 ft. square. This avoids scattering the material around the floor, and the pan is a convenient receptacle for handling with the hot-metal crane. The charging machine clears it in passing.

Flexibility of Furnace Operation

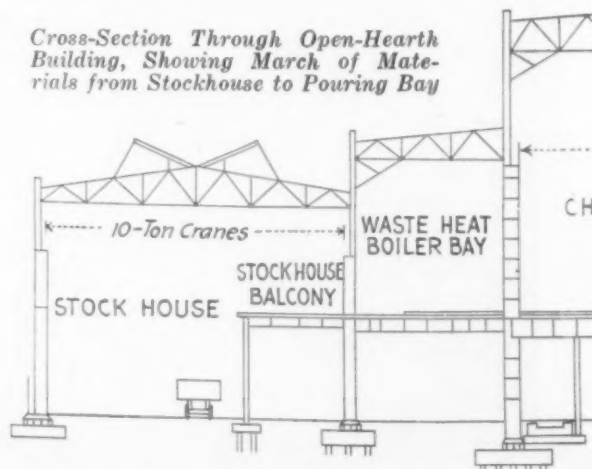
The furnaces are of unusually rigid construction, with hearths 15 x 37 ft. and buckstays of steel castings. The length from face to face of the chills is 42 ft. 7½ in. They have water-cooled fronts, ports and ends. The five doors and their frames are water cooled and electrically operated, there being a single control for all the doors. The reversing valves and stack dampers, also are controlled electrically. Push button control for the doors, valves, stack dampers and waste-heat boiler dampers and the tar and steam control are at a central point at the back of the charging floor, along the edge of the waste-heat boiler bay. Closely adjoining these controls are gages showing the tar pressure and steam and water pressure, and also a tar superheater and a recorder showing the tar consumption. The stacks are of steel, with brick linings, 175 ft. high and 7 ft. 6 in. in diameter.

Regularly, the furnaces are fired with tar from the company's coke ovens, but they are provided with burners with which either gas or oil may be used. Tar is brought to the plant in tank cars, from which it is discharged into storage tanks just outside of the open-hearth building.

By means of a horizontal screw mechanism, the furnaces may be tilted 22 deg. forward and 10 deg. backward. The doors are raised by means of a chain connected to a motor-driven drum. The door-operating mechanism is located on a platform above the front of the furnace. Slag is poured from the front of the furnace, which can be done with the tilting type. Another advantage of this type is found in tilting the furnace to repair bottoms.

A 600-ton hot-metal mixer is located at the side of the pouring bay at the lower end of the building. The mixer is on a line with the open-hearth furnaces, so that the cranes on the pouring side will deliver hot metal into the mixer. Metal from the mixer is poured into a 65-ton ladle resting on a scale located on the charging bay side and the hot-metal crane carries the ladle from the scale to the furnaces located near that end of the plant. If the metal is to go to furnaces not close to the mixer the crane places the ladle on the hot-metal car for haulage to point of use.

Slag is handled in conical pots of 250 cu. ft. ca-



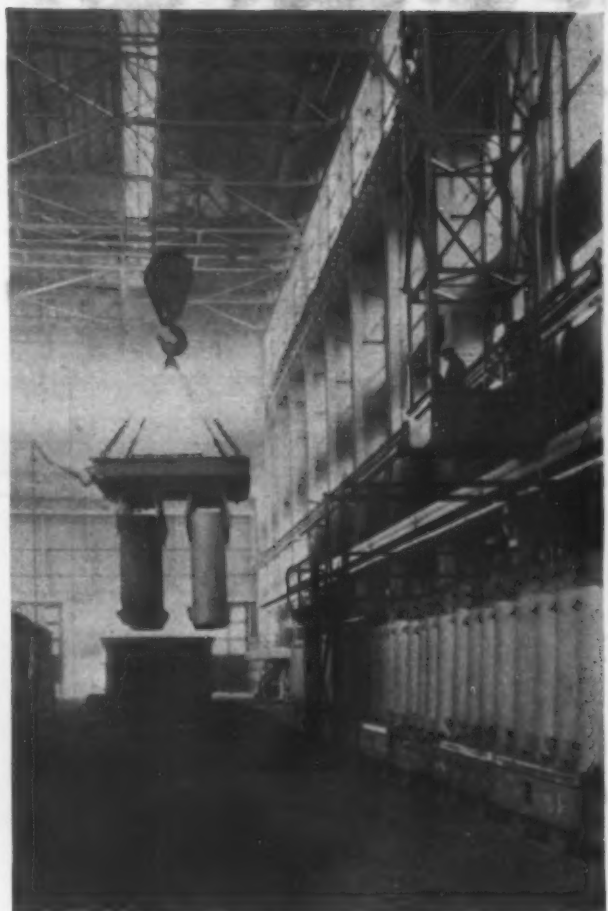
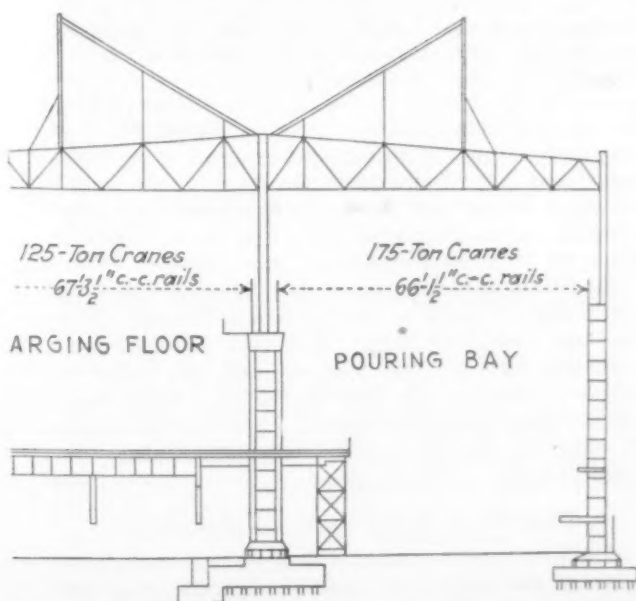
capacity, mounted on slag cars operated by an electric locomotive. These cars run on tracks extending under the furnaces from beneath the stockroom balcony. The slag pot is set under, instead of in front of, the furnace, and is not removed from the car; the slag is poured directly from the furnace into the pot. This method of handling slag eliminates the necessity for a spout-handling jib crane at the back of each furnace.

When the furnace is being tapped the slag pot stands directly behind the steel ladle and a portion of the slag overflows from the back spout of the ladle into the slag pot. After the ladle is filled and lifted away, the slag pot car is moved forward a few feet, to the edge of the pouring floor. While in this position the slag left in the bottom of the steel ladle, after the steel is teemed from the ladle, is dumped into the slag bucket and the furnace is tilted forward further, to permit the slag remaining in the furnace to run into the slag pot.

Unusual Method of Teeming Ingots

One of the most interesting features of the plant—a radical departure from usual open-hearth practice—is the method of pouring ingots, which has been adopted because of the use of very small ingots. The metal is cast into 1500-lb. oval corrugated ingots in inverted type ingot molds, instead of into 4000 to 6000-lb. ingots, as is the usual practice. The ingots are made in this small size to keep down segregation and to get a more uniform product. The corrugated form was adopted with the view of improving the quality of the metal. Because of their small size there are 120 or more ingots to a heat, and because of the increased number it was necessary to pour more than one ingot at a time.

Consequently a plan was adopted and equipment provided for pouring four ingots at a time. The heat is tapped into a 120-ton bottom-pour ladle, which is handled with a 175-ton electric traveling crane, two of which serve the pouring floor. From the large ladle the metal is teemed into a triangular ladle or pouring dish about 8 x 8 x 8 ft. and 2 ft. deep. This has four spouts or nozzles, through which four ingots are poured at a time. This pouring dish is lined with about 6 in. of fire brick and has a cast steel cover lined with 4 in. of fire brick. There are four slots in the back of the cover, through which the stoppers extend, and near the front of the cover is a rectangular hole 5 ft. long and 1 ft. wide through which the metal from the large ladle is teemed. The re-pouring serves to mix the metal further and thus to make the steel more uniform.



Multiple Lifting Jacket for Dipping Eight Ingot Molds at a Time Into a Tank of Graphite

This unique pouring dish, mounted on a car at the back of the pouring bay, is 8 ft. above the ingot car track, which runs along the bay on the ingot pouring side. The inner end of the pouring dish car is supported on a structure in which its electrical operating equipment is located. Eight ingot molds are placed on an ingot car, in two rows. When an ingot car is spotted, four molds on one side of the car are directly under the four spouts of the pouring dish. The large ladle remains in a fixed position above the dish until its contents are poured. The pouring dish has an electrically operated transverse movement of 39 in.

When the first four ingots have been poured, the pouring dish is racked to a position directly over the four other molds on the ingot car. As the ingots are being poured a supply of metal is flowing from the large ladle into the pouring dish. The elongated hole in the dish cover permits continuous pouring from the large ladle into the dish when the latter is in either pouring position, or when it is being racked from one position to the other. When both rows of molds on the car are poured, the train of ingot cars is mechanically racked a fixed distance, stopping with the next car directly under the pouring dish. A train has a sufficient number of cars and molds to handle all the metal from one heat.

Men who operate the stoppers in the pouring dish are stationed on the pouring car platform, where they can see the stream of metal flowing from the dish ladle into the ingot molds. Control of the racking movement of the pouring dish car and of the movement of the ingot mold cars is through levers on the ingot pouring platform, along the side wall, where the operator has a clear view of the equipment as well as of the flow of metal to the molds. Two of these pouring stations are in operation and a third will be provided. The pouring platforms are 150 ft. long and

10 ft. wide. A safety platform, also, extends the entire length of the ingot pouring side, this being on the same level as the ingot pouring car.

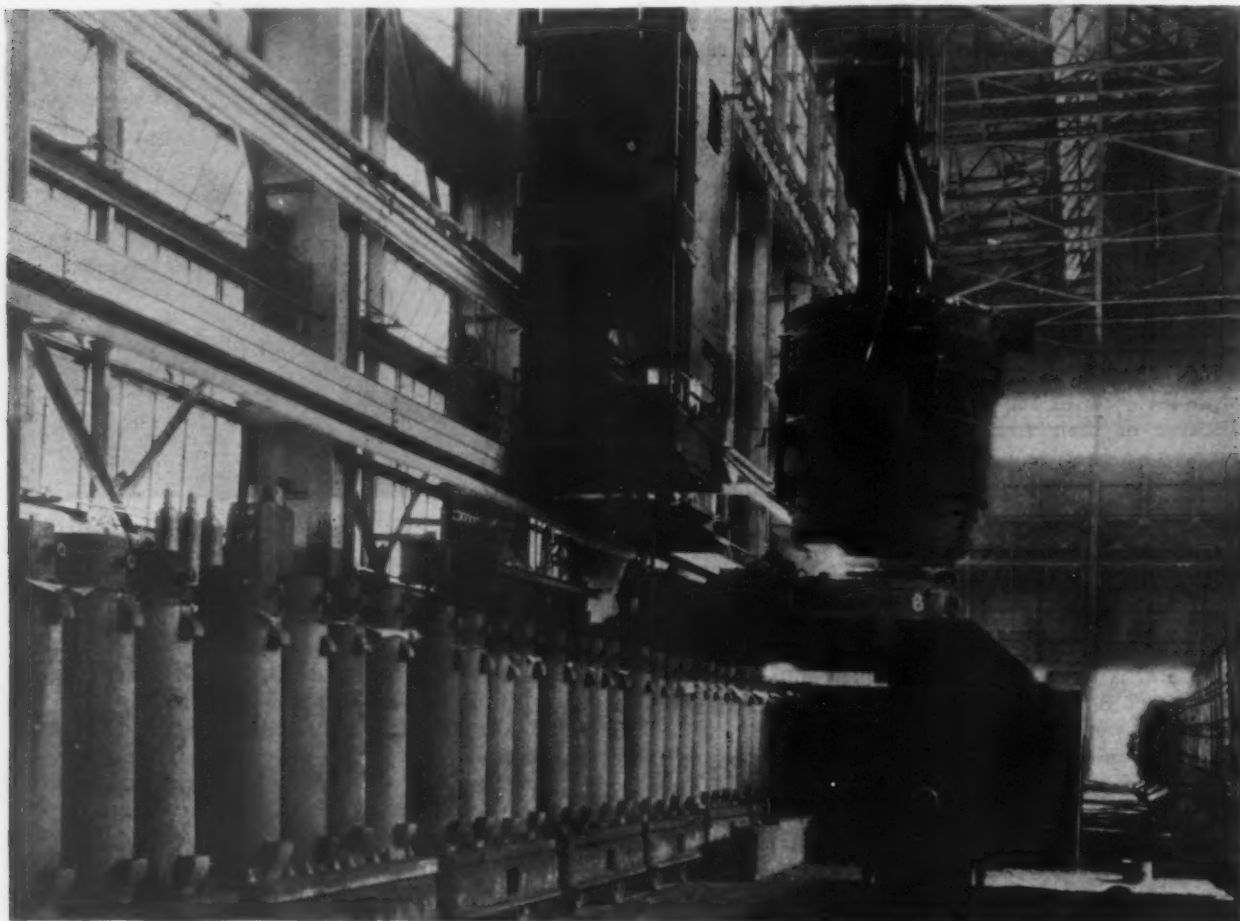
Sand Hot Tops Employed

Hot tops for the ingot molds are made in the plant, from waste sand from the foundries, instead of the usual brick. After the ingots are poured, the train of ingot buggies goes into the sand and stripper building, which is located at the side of the open-hearth building. There the hot tops are removed and the sand that adheres to the hot top flasks is shaken out with a vibrator.

After the hot tops have been removed from the

to a rack, suspended from a power-driven conveyor, and the racks go into a continuous gas-fired oven 60 ft. long, in which they are dried for 2 hr. The hot tops, then ready for use, are placed on a conveyor that extends through the wall from the mold room into the adjoining pouring bay and carries them up to a platform on the ingot pouring side, where they are mounted on ingot molds as the latter are brought to the pouring floor.

At this end of the plant the eight molds are lifted from the car at one time, with a multiple lifting jack having lever-operated arms that hook under the lugs of the molds. With this device the molds are dipped together in a tank of graphite; while they are off the



Steel Is Teemed from the Ladle Into a Triangular Ladle or Pouring Dish Mounted on a Car at the Back of the Pouring Bay. From this dish, four ingots are teemed at a time. While the metal is flowing into the small ladle, it is also flowing from the latter into the molds. The pouring equipment is arranged to permit continuous pouring from the large ladle until it is empty. This pouring method was adopted because the usual method of direct pouring of one ingot at a time would have been too slow, when small ingots are made, of only 1500 lb. each. The diagram on next page shows how this method works, the dot-and-dash line showing second position of pouring pan

molds, the ingot car is placed under a stripper, where the ingots are stripped without removing them from the molds. The ingot is loosened from its mold by a ram beneath the car. When the unit is complete it will have eight ingot strippers, so that all the ingots on a car will be stripped at one operation.

The ingots loosened from their molds are taken, on the same cars on which they were poured, to the soaking pit building, where they are picked out of the molds by the soaking pit crane. This method of stripping ingots was adopted to save time, because, with the small ingots, the usual stripping methods would have proved too slow.

Sand from the hot tops, together with some of the waste sand from the foundry, goes through a sand-mixing machine, from which a conveyor delivers it to overhead hoppers, from which it is discharged to a jar ram-type molding machine beneath, in which the hot tops are molded. The molds are placed on racks, nine

car, the mold stools on the car are cleaned off. The pouring bay has a 25-ton crane for handling the ingot molds and for miscellaneous work. A 10-ton crane for repair and general service work extends across the charging and pouring bays, being located on a runway above the large metal-handling crane runways.

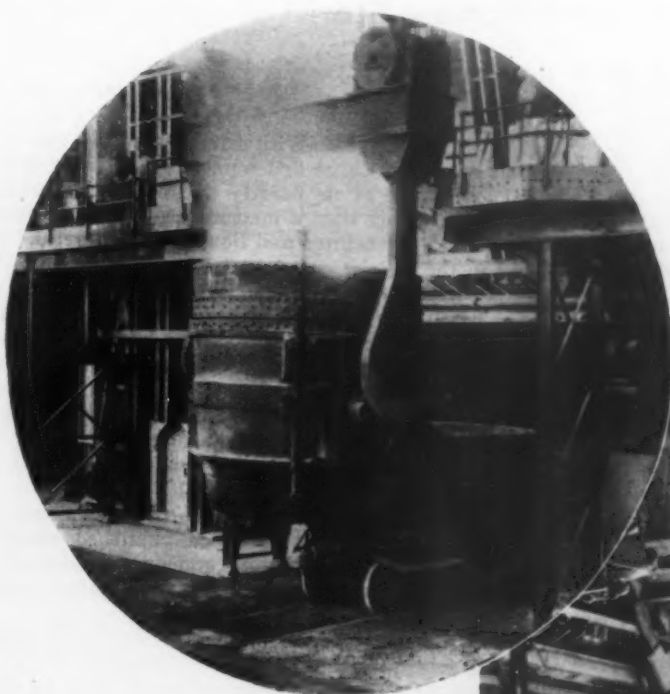
Ladle stoppers are dried in a gas-fired oven, in which they are hung in four rows and through which they are pushed by hand. This oven has two compartments, one for long stoppers and one for short stoppers. Stoppers are kept in the oven three days. The oven has fool-proof features, one of the advantages of which is that there is no uncertainty about the stoppers being sufficiently dried.

Waste-Heat Boilers with Superheaters

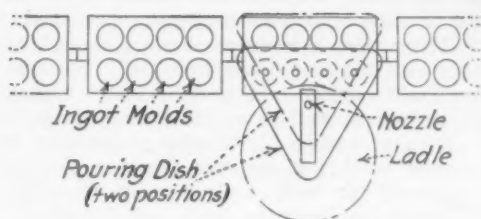
Each furnace is connected to a vertical waste-heat boiler of the single-pass fire-tube type, of about 400 rated hp. capacity. These boilers are located in a

30-ft. bay between the charging floor and the stockyard. Waste gas from the checker-work passes through a tunnel leading to the stack and is by-passed by dampers from the tunnel to the boilers. From the tunnel the heat passes through a superheater located in the uptake, down through the vertical boiler through a steam turbine-driven fan equipped with a combustion

Each boiler has a heating surface of 5700 sq. ft. and is built for 250 lb. pressure and 100 deg. superheat. The waste heat enters the superheater at 1200 to 1300 deg. and leaves the boiler at 450 deg. The steam lines from the waste-heat boilers are connected with the main steam lines of the Ford works, so that the steam can be used at any consuming point.



When Tapping the Furnace the Slag Pot Stands on Its Car Back of the Hot-Metal Ladle and Under the Furnace. After the ladle is filled the slag pot car is moved forward a few feet; while in this position the slag remaining in the furnace and in the ladle is emptied into the pot. Photo at left shows the position of the ladle and slag pot during tapping and photo below shows the position of the slag pot moved forward to receive slag from furnace and ladle



controller, and is exhausted through the fan to the stack. A constant suction pressure for combustion is maintained on the furnace, irrespective of the gas flow.

The tubes of the boilers are of small diameter and so grouped as to provide positive circulation of the water, by rising currents following the vertical axis of the boiler and falling currents along the entire outer shell. The upper shell course of the boiler is tapered outwardly, providing a steam relieving area and steam storage dome. The top of the boiler is fitted with a hood to provide connection with the waste-gas uptake. Aside from the space taken by the fan and drive, the space occupied by the boiler equals the shell diameter.

The building is of massive construction. Its length is 1068 ft. and the total width 234 ft. More than 12,000 tons of steel were required in its construction. It is totally inclosed, and nearly the entire outer surface is glass. In its construction, 16,180 24-in. x 4-ft. 10-in. lights of glass were required. The roofs have monitors and ventilating sash to secure the maximum amount of ventilation. The roof is 74 ft. above charging floor, to the bottom of the trusses, and 112 ft. to the peak. It is covered with concrete roofing tile, requiring 263,000 sq. ft. The building and equipment are supported by 7728 composite wood and concrete piles averaging 78 ft. in length.

Escape Standardization by Practising It

"The only way for people to escape 'standardization' is to practise it," writes Harper Leach, business economist in *Making Markets*, the monthly publication of the Sheet Steel Trade Extension Committee, Oliver Building, Pittsburgh. "Only as fast as the pressure of immediate material necessities upon the human spirit is lightened through the employment of standardized machinery, tools and construction," continues Mr. Leach, "is life itself capable of infinite variety." In this manner it is pointed out that the selling of a standardized product like sheet steel for

any of its numerous uses not only promotes material welfare, but enlarges spiritual liberty.

The grain depth of cut theory presented by the late George I. Alden, one of the founders of the Norton Co., Worcester, at the annual meeting of the A. S. M. E. in New York, December, 1914, has been reprinted in the October issue, *Grits and Grinds*, a Norton publication, under the title of "Operation of Grinding Wheels in Machine Grinding." The issue also contains a brief article on the cylindrical grinding of chromium steel shafting.

Controlling Segregation in Steel

Main Factors to Be Considered—Segregation Defined and Its Progress Described in Killed, Partly Killed and Rimming Steel

BY HENRY D. HIBBARD*

SEGREGATION in steel may be defined as the concentration during solidification of certain of its soluble or miscible non-ferrous ingredients in certain ways in the ingot and in certain parts thereof.

There are several ways in which this may occur but commonly it means the collection in the parts of the ingot which remain fluid longest, that is, in the upper central parts, of more carbon, sulphur and phosphorus than the average contents of those elements in the whole ingot. Manganese and silicon do not segregate much, if at all.

The rule seems to be that elements alloyed with the iron, including manganese, silicon and possibly titanium, do not segregate, while those in chemical combination, notably carbon, sulphur and phosphorus do. Any excess of manganese or silicon above the average for the ingot as a whole, found and reported by the chemist as segregation, has presumably existed in the ingot, in part if not wholly, as silicate of manganese, as noted later.

Strictly speaking, segregation always takes place in freezing steel, but it occurs notably and harmfully only in certain parts of certain kinds of ingots as explained hereinafter. When there is marked segregation in an ingot, the place where the concentration of segregating elements is greatest constitutes a more or less serious defect, the metal there being unduly hard, low in ductility, comparatively brittle, and unable to endure a proper working temperature without damage. Hence such concentration should be minimized for the best product. The remainder of the ingot may be held to be slightly damaged or slightly improved by segregation, according as the proportions of the impurities present in any part are increased or diminished by its action.

If a steel ingot immediately after teeming could, by some magic, be instantly frozen solid it would be of practically uniform composition throughout. Therefore the closer approximation to instant solidification of the ingot, the less segregation is to be expected. Because of segregation, as well as for other reasons, there is no such thing as a homogeneous steel ingot, though small ingots of killed steel approximate thereto well enough for practical purposes.

The action which causes segregation results from progressive freezing, and is fundamentally crystalline. In the case of an ordinary grade of steel, when the mold is first filled, (assuming its temperature to be right), the metal in contact with the iron mold is chilled so that it forms a solid shell, so quickly that there is not time for segregation to take place in it. The shell has therefore about the average composition of the whole ingot.

The next metal to freeze does so at a slower rate and rejects some of the relatively impure and hence more fusible metal (the reject), and itself forms dendrites or crystals between which some of the reject is caught and held. This metal next to the shell will therefore have less than the average of non-ferrous elements. The reject not held by the dendrites enters and merges with the molten pool of metal within, making it correspondingly more impure.

As the steel freezes further, it forms solid crystallites in the fluid pool which are minute at first, and are purer and hence heavier than the average of the whole, the interior metal which is still molten being thus made continuously and progressively richer in the

segregating elements. With further cooling the crystallites become so large and numerous, that the central metal loses some of its fluidity and becomes semi-fluid or mushy, it being then a mixture of solids and liquid; that is, solid crystallites and liquid mother metal.

When the molten pool is quietest, as it is when the steel is killed, and also when it remains liquid an extended time, as in the case of large ingots, the crystallites settle as described later. After cooling has proceeded until the crystallites have become stationary the relatively small amount of still fluid mother metal, which has now gained its maximum of impurities, is concentrated along the axis of the ingot occupying the spaces vacated by the continued shrinkage of the interior metal, due to further cooling.

This statement of the sequence of phenomena resulting in segregation is based on published analyses of the various parts of ingots and on sulphur prints of ingot sections for, where sulphur segregates, carbon and phosphorus do also.

Segregation may be made apparent (1) by analyses, of which a large number may be required to show its full extent, or (2), by sulphur prints, or (3), by deep etching, as by immersing a piece or section of the steel in half strength hydrochloric acid for some days or a week.

All steel containing a substantial percentage of carbon passes through the mushy stage mentioned in freezing, it being then a mixture of solid though soft particles, (crystallites or "mixed crystals") in suspension in the liquid mother metal. The latter contains most of the carbon as well as of the other segregating elements. Without carbon the mushy phase does not occur. Because of this phase two freezing temperatures are observed for each steel; namely, the one at which the crystallites begin to form and the other at which the whole is solid. In the carbon diagram this is clearly shown.

Carbon lowers the freezing points of steel about 100 deg. C. for each per cent it contains, which is far greater than the effect of any other element to that end. The last metal to freeze is at the bottom of the pipe cavity, if there is one. It is the richest in segregate, and usually constitutes the most harmful feature of segregation. It is desirable, therefore, to have this spot in the top part of the ingot, which is rejected as scrap, leaving the body of the ingot all good as far as segregation is concerned. The reject follows one or more of several courses, as hereinafter set forth.

Sonims

There is also sometimes a collection through gravity of insoluble solid non-metallic impurities (sonims) in the upper part of the ingot in certain steels, particularly in those which are partly killed which have, as a consequence, a pipe cavity and numerous gasholes near it. These impurities may occur as a notable mass, sometimes weighing ounces, in the bottom of the pipe cavity, or disseminated in minute particles or drops through the metal in its vicinity; often in both ways.

Sonims in plain steel, which so collect, are almost wholly silicates of manganese and iron. They will be at a minimum, if not absent, in well-made killed steel. They are sometimes referred to as segregated oxides. They sometimes make up in part, if not wholly, the excesses of silicon and manganese above the average contents of those elements in the ingot found by the chemist and reported as segregation, but they do not

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conform to our definition of that feature, not being soluble in or miscible with the metal.

Hard Spots

The impure metal rejected by the freezing crystallites contains far greater percentages of the non-ferrous elements, particularly of carbon, than any analysis of the segregated part of an ingot would disclose. This is indicated by the presence in some steels, notably of the forging grade, of hard spots which may be hard enough to crumble or blunt the cutting edge of the tool employed in machining them.

Stead explained such hard spots quite satisfactorily as being caused by some of the reject being forced into gasholes already formed, usually, if not always, close to the surface of the ingot, by pressure of gases within which separated later. This explanation is often supported by the presence, next to the hard spot and forming a part of the boundary, of a gashole only partially obliterated by the forging operation.

In the solidified ingot segregation may therefore be (1), dendritic, when the reject is located between or among the grains or crystals, (2), regional, when the reject is progressively concentrated in the parts of the

considerable size, say over 15 in. square, the loose crystallites in the central portions form the solid part of the mushy phase of the metal. Being heavier, because purer, than the liquid part, they settle somewhat, displacing their volume of the latter so that the lower interior parts of the ingot are somewhat purer than the average of the whole, while the upper part will contain more of the segregating elements as regional segregation. The purer metal in the lower interior parts is said to be negatively segregated or impoverished.

In small ingots of killed steel, such as those ordinarily cast of crucible steel, usually 4 x 4 in. square, segregation is so slight as not to be readily detected. It is because the steel is dead and the time for solidification extremely short. In large ingots of killed steel, such as are used for making cannon, the time for solidification is prolonged and negative segregation may be readily detected by analysis of the different parts. In fact, it was not until large steel ingots were made that segregation in steel became known.

Partly Killed Steel

As there are many degrees of partly killing steel, so there are many degrees of segregation in such steels,

*I*N the last two years Mr. Hibbard's contributions to THE IRON AGE have included nine articles on various phases of open-hearth steel making. What has made the articles of unusual practical value is that they have covered experiences and observations which have not hitherto been reduced to writing. That the fundamental character of the material and its usefulness as a guide to present-day operators is appreciated is shown by the reprinting of some of the articles by a large steel company for distribution among employees.

ingot which freeze later, or (3), in gasholes where it sometimes forms hard spots.

The molten interior metal of a cooling ingot is in motion, more or less active, which motion largely determines the location of the reject in the ingot. The motion varies in intensity greatly according as the steel is killed, partly killed or rimming. Each variation will be considered separately.

The causes which produce or tend to produce motion are:

- (1). Increase of specific gravity due to cooling. This includes freezing of the crystallites.
- (2). Decrease in specific gravity due to accretion of reject, and
- (3). Gas bubbles which form and rise, displacing metal in their paths.

These bubbles vary in quantity from none in killed steel, to a few in steel nearly killed which stands, to many more in rising steel, and to a great profusion in rimming steel. Motion No. 1 acts only in killed steel. No. 3 acts chiefly in rimming steel. Nos. 2 and 3 act in partly killed steel, the effect of each depending on the degree to which it is killed.

Motion No. 1 would appear as convection currents in a homogeneous cooling fluid, but seems not to do so in steel, as such currents if they occurred would be downward adjacent to the cooling surfaces, while the motion of the molten steel is manifestly upward there, due to cause No. 2. This shows that the increase in specific gravity of the metal, due to cooling, is less than the decrease due to the accretion of the lighter non-ferrous elements. The settling of the crystallites in all kinds of steel is evidently due to motion No. 2, they being purer and therefore heavier than the still fluid metal around them, though of the same temperature.

Killed Steel

When steel is perfectly killed, as by being quieted down in the furnace followed by additions of silicon, aluminum or titanium, so that no gasholes form in it, regional segregation is at a minimum. Most of the reject is retained between the grains and crystallites as dendritic segregation. When the ingot is of any

varying from that when the steel is nearly killed to that when it rises in the mold, modified of course by the conditions which affect segregation noted herein.

When the steel is nearly killed, the dendrites which form next to the ingot shell retain much of the reject as dendritic segregation as in the case of killed steel. The central portions act much as in killed steel except that they are in more active motion, which dislodges more of the reject from where it forms and carries it up and in and so gives more marked regional segregation.

In ordinary partly killed steel, the central metal of the ingot is in yet more active motion depending on the quantity of gas evolved, and consequently still more of the reject is washed away from the solidifying metal and merged with the liquid mother metal and the spot of maximum segregation contains yet more of the segregating elements.

The hard spots referred to are likely to occur in partly killed steel, and perhaps only in such steel, as it is the only kind that has gasholes adapted to receive the high-carbon reject which forms them. When the reduction of the ingot as in the forging operation is relatively small, say to a cross-section of one-fourth or one-fifth of that of the ingot, and hard spots appear when the forging is machined, there will often be in the piece, adjoining each hard spot or some of them, the remains of a gashole as already noted.

Rimming Steel

Well-made rimming steel in the mold is in active churning motion due to effervescence, which is the rise through it and escape of myriads of gas bubbles beginning when the first of it enters the mold and continuing until the thick outer shell has become solid and the central metal mushy. Because of this motion, dendrites probably never form in this steel and dendritic segregation therefore does not take place.

One might assume offhand that rimming steel, being so continuously stirred in the mold, would be practically homogeneous and have less segregation than that made by any other method. The fact, however, is just

the opposite and rimming steel is, as a rule, strongly and sometimes harmfully segregated, regional segregation being pronounced. The lively motion of the central metal washes away the reject from the walls as freezing proceeds, more completely than is the case with other steels, and the still-molten pool becomes progressively more impure as solidification goes on.

The manner of solidification of an ingot of rimming steel is somewhat like this: The first metal to freeze forms a shell around the ingot walls which has practically the composition of the metal in the ladle because the time is too short for notable segregation to take place. This shell will be only a small fraction of an inch thick. Inside this shell will be a vertical zone of purer metal, due to negative segregation or impoverishment from the churning action as noted, extending all around the ingot and usually a few inches thick. Inside this is the enriched central part.

There is no negative segregation in the lower interior parts of rimming steel, apparently because the rising bubbles interfere with settling of the crystallites. The central upper part of the ingot, where segregation is strongest, may have two or three times as much carbon, sulphur and phosphorus as the ladle sample and outer skin of the ingot. The spot of greatest segregation, near the upper end of the axis, constitutes a more or less serious defect, the metal lacking in ductility and also in weldability when that property is required. With the exception of this spot, segregation in rimming steel is not particularly harmful except when it is used for making welded pipes.

In making lap-welded steel pipe from sheared skelp, the exposed center of the plate in a segregated part is likely to be so softened and weakened at the welding temperature (about 1420 deg. C.), as to separate, causing a split in the plate, usually called a lamination. Not only at the spot of maximum segregation but almost anywhere in a plate of rimming steel this may happen.

It might be thought from its appearance that the split is an imperfect weld, but a sulphur print of a section across the weld will show it to be in the segregated part. This argues that, for welding, the abutting surfaces to be welded should be of the outer metal or skin of the ingot and not of the interior as exposed by shearing where there may be enough segregation to cause the defect noted.

Factors Controlling Segregation

Matters which affect, and in some measure at least may be employed to control, segregation may therefore be summarized in the following four divisions. These assume temperature and other appertaining conditions of the steel to be usual and normal:

I. In the Melting Furnace

(1) *Purity of the metal:* Purity of course limits the proportions of the segregating elements. In high

quality steel the less sulphur and phosphorus contained the better, but the carbon content must of course be gaged according to the strength the steel must have.

(2) *Degree of killing:* For steel to be killed, which, as we have seen, tends to minimize segregation, the bath in the furnace should be properly quieted by suitable treatment and additions thereto, so that there may be only a controllable amount of gases in the metal for the gas-solvents added to deal with, to the end that they may be entirely suppressed.

II. Casting

(3) *Degree of killing:* This is accomplished by the addition in the ladle and molds, one or both, of suitable quantities of gas-solvents, namely, silicon, aluminum, and titanium, one or more, to hold the gases and prevent their separation as gas-bubbles, which by rising might give motion to the molten metal.

(4) *Casting temperature:* This should be as low as will permit of practically all of the charge being properly teemed into the molds.

III. After Teeming

(5) *Duration of the fluid phase:* This is influenced by:

a. *Size of ingot:* This refers particularly to the minimum thickness which measures the mass and hence determines the duration of freezing. The thicker the ingot, the longer the time and the more the segregation.

b. *Rate of teeming:* The slower the rate, the less time is required for solidification after teeming is finished because that action will have proceeded while the mold was being filled. Hence slow teeming tends to minimize segregation.

c. *Rate of cooling:* The quicker, the better. To hasten cooling (1) excessively thick molds may be employed or, (2) cold steel, of about the same composition as that being cast, may be immersed in it. In small quantity it may be melted by the surplus heat. In larger, it may be made to start solidification near the center. For this latter purpose, the immersed cooling piece or pieces must be too large to be wholly melted by the fluid steel, when it will be welded to and form the central part of the ingot.

IV. Mechanical Aids

(6) *Hot top:* By the use of ample means to keep the upper part of the ingot molten until the body has become solid, the place of maximum segregation may be raised into the sink-head which is rejected. For this the ingot should be cast with larger end up.

(7) *By compression:* Compressing the ingot by press or rolls, while its center is in the mushy stage, when the crystallites, which are solid, are mostly formed, and much of the more impure mother metal is still fluid, will, or at least may, drive some of the latter in the line of least resistance; in this case, toward or into the pipe cavity or sinkhead, if there is one. This may result in negative segregation in the central parts of the ingot.

Industry Organizes Commission to Aid Agriculture

A "Business Men's Commission on Agriculture" is being created jointly by the National Industrial Conference Board and the Chamber of Commerce of the United States. The object of the commission will be to make an intensive study of the agricultural situation in the United States, with the purpose of formulating "a national program for cooperation of all economic groups in protecting the permanent national interest in a sound and prosperous agriculture." Hon. Charles Nagel, St. Louis, former secretary of the United States Department of Commerce and Labor, has been made chairman of the commission.

A joint statement of the conference board and the chamber regarding the commission is, in part, as follows:

The farming industry as a whole seems not to have been as prosperous as other occupational groups since the United States began to change from a dominantly agricul-

tural to an increasingly industrial and commercial nation. This has created a situation which forms one of our most difficult economic problems and can not be neglected without inviting serious consequences to our national economic progress. We need to develop and insure a sound national agriculture that will progress in full harmony with industry and commerce toward greater national economic strength and prosperity.

The full membership of the commission is to be announced at an early date. The commission is to be an entirely independent body. In pursuing its studies it will seek information and suggestions from the leaders in every field of business and agricultural activity, and from noted authorities in agricultural practice and science and in political economy. The headquarters of the commission will be in New York, but hearings and conferences will also be arranged in other important centers. The organization of the commission comes in response to a conviction that the qualities which make for success in other industry can be applied in a study of agriculture. The two national organizations sponsoring the commission will finance its work.

Timken Bearings and Gas Furnaces

Data on Fuel Consumption and Other Features of Heating and Annealing Practice—Scrap Reclamation
by Briquetting

BY F. W. MANKER*

SIMPLE though a roller bearing is, in that it consists of but four parts—the cone, the rollers, the cage to space the rollers properly about the cone and the cup which fits over the cone and rollers—the utmost precision in every operation of manufacture and assembly is necessary to insure perfect operation. They are frictionless within 0.1 per cent. Besides the home plant at Canton, Ohio, the Timken Roller Bearing Co. has four plants located in Columbus, Ohio, Walkerville, Ont., Birmingham, England, and Paris, France.

The Canton and the Columbus works together have capacity for manufacturing 132,000 bearings every day.

The company makes its own special analysis steel alloy in five Héroult electric furnaces, which turn out 235 tons daily. This steel is poured into molds and the resulting ingots, after being heated through uniformly in gas-fired soaking pits, are bloomed or reduced in size in a 35-in., three-high blooming mill.

Roller Bearings Throughout Blooming Mill

This new 35-in. blooming mill was the first completely Timken-equipped mill ever built—Timken bearings in the 10 and 15-ton Morgan cranes, in the mechanism of the ingot pusher, to carry the thrust load on the screws which operate the soaking pit covers, in the table rollers of the mill and shear—in fact, almost everywhere except in the rolls of the mill itself. Operating at capacity, this mill will turn out 1200 tons every 24 hr., which is far in excess of the capacity of the plants it serves. The balance or reserve capacity is used for custom work.

Blooms, which run from 6 x 7 to 9 x 10 in., are put into a gas-fired furnace some 10 ft. wide and 95 ft. long and heated to about 2300 deg. Fahr. A 22-in. mill then rolls them into bars or rounds from 2 to 7 in. in diameter and from 20 to 75 ft. in length, producing

tube or roll stock. These bars or rounds are sent to the 10, 12 or 16-in. merchant mills to be drawn into rods or flats. The rolling mills occupy a space close to 2000 ft. long.

Rods produced as above are fed to some 27 roll headers or upsetting machines, capable of turning out 1,800,000 bearing rolls in a 24-hr. day. These machines were especially designed for the Timken plant and do the work that would ordinarily require nearly 300 screw automatics.

Rounds destined for the piercing mill are hot sawed to length, heated to about 2300 deg. Fahr. in the furnace, and run through the piercing mill, where they are made into seamless tubes, for cups and cones. The furnace is 66 ft. long, 10 ft. wide and 3 ft. high, interior dimensions. It, as well as the reheating furnace referred to on the next page, is equipped with the gas-firing system of the Surface Combustion Co., New York.

Burners Deliver Gas Under Pressure

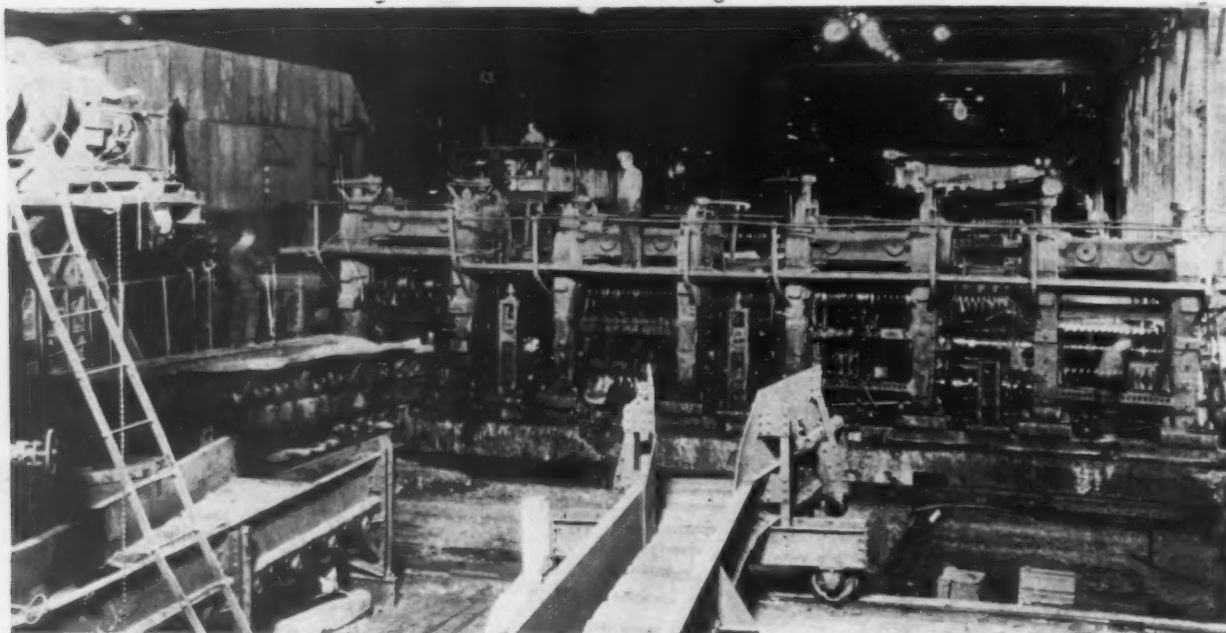
Water-cooled velocity burners are used—three firing through the center roof and three through the discharge end. These burners have a throat diameter of 7½ in. and a capacity of 9130 cu. ft. an hr., each. The capacity of the furnace is 17 tons of work per hour. The hearth slopes from the charging to the discharging end, so that the round bars roll through continuously. The gas is delivered under a pressure of 20 lb. and the proper amount of air required for combustion is inspirated through venturi tubes. A slightly reducing atmosphere in the furnace is essential, and is made possible by the automatic air-gas proportioning device.

A test run of a month's duration, made on the piercing-mill furnace, showed total gas consumption for the month of 6,389,647 cu. ft. This was natural gas of approximately 1000 B.t.u. per cu. ft. The furnace was run on single turn, being shut down at 4 or 5 p. m. each day and relighted at about 10 p. m., to heat

*Surface Combustion Co., New York.



Car-Bottom Furnaces with Motor-Driven Cars
1549



This 22-In. Bar Mill Will Roll in 24 Hr. Enough Steel for 130,000 Bearings

it up for the following day's run. Hence the gas consumed during the hours of operation for the month amounted to 4,223,625 cu. ft., or 66 per cent of the total.

During the same period 1974 tons of steel tubes were treated, while the tonnage charged was 2154 tons, indicating a yield of 92 per cent. On the basis of tonnage charged, the gas consumption was 1960 cu. ft. per ton of work, while the overall fuel consumption, including heating up, was 2880 cu. ft. per ton. On the basis of finished tonnage, these figures were 2136 and 3235 cu. ft. per ton respectively. The stock used in this test was round and practically all of it ranged from 5 to 6½ in. in diameter. It was charged in single row. The maximum rate of operation for the furnace was 16½ tons of work heated per hour.

In the piercing mill the hot rods are rotated and pulled over a plug which pierces a hole through them longitudinally. They are then rolled in a 22-in., two-high, automatic rerolling mill to reduce and obtain the proper wall thickness, and then conveyed to a reeling

machine which smooths the tubes, inside and out, and makes the wall thickness uniform.

A high-speed conveyor next takes the tubes to a reheating furnace which is 22½ ft. wide and 24 ft. long and has an inclined hearth so that the work may pass through by the force of gravity. This furnace uses four water-cooled velocity burners with a throat diameter of 7 in. The tubes are heated from 1200 to 2000 deg. Fahr. and the furnace has a capacity of from 10 to 12½ tons of work per hour. A reducing or deoxidizing atmosphere is maintained, lessening loss from oxidizing scale. The tubes range from 3 to 6 in. in diameter at the start but are reduced, in these processes, to from 2 to 4½ in.

Making Cups and Cones

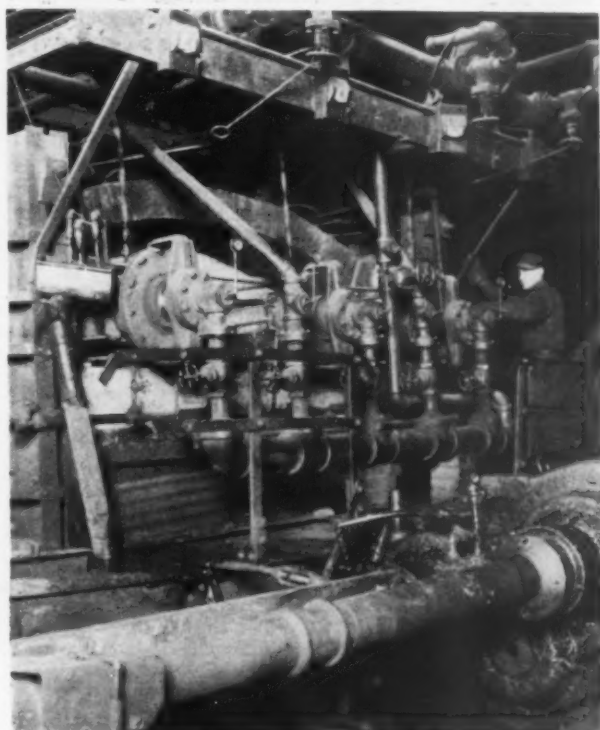
The cups and cones are cut and formed in 700 automatic machines at the rate of 297,000 a day. These parts are then packed in bone meal and put into gas-fired carbonizing furnaces, where they are heated close to 1700 deg. Fahr. for varying periods of time, accord-



Tube Reheating Furnace With Gas-Burning Equipment at Left. Pinch rolls in foreground shove the heated bar out for rolling

ing to the depth of case required. After being hardened in other furnaces they are sent to the grinding department, where nearly 1000 grinding machines are in use. In fact, Timken leads the world in the grinding field and has many more grinders, operators and pieces ground than any other plant.

Multiple perforating machines, developed to manufacture the cages, punch out all the pockets of the cage simultaneously. For years each cage pocket was punched out separately and, no matter how accurately this machine operated, there was always a slight creeping of the metal, so that the first and last pockets varied a little. The multiple perforating machine overcame this. That the rolls may fit these pockets precisely, the cages are winged, that is, the sides of the



Gas Controls and Burners at One End of Piercing Mill Furnace

pockets in the cages are pressed to a contour coinciding with the contour of the rolls.

Final operations include assembling, running in and sound testing. An interesting machine called the Audion Sound-Testing Machine has been developed, which measures the sound of a running bearing by means of a microphone, registering on a dial. A noisy bearing is, of course, rejected.

Reclaiming Scrap Steel

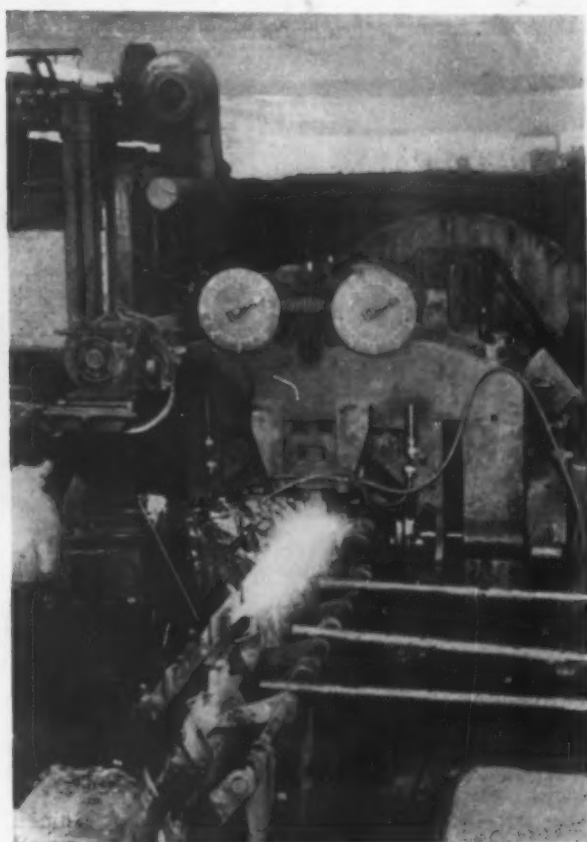
A novel method of reclaiming scrap material developed by the Timken company consists of a briquetting machine, which was one of the first successful machines of its type. The savings are reported to have paid the original cost in less than a year. In the Canton and Columbus plants more than 100 tons of steel shavings and borings are made every day. When compressed into a solid bale or briquet, practically all of the steel is reclaimed. Prior to the invention of the briquetting machine, two scrap balers were used and 18 men, working 20 hr. a day, were able to handle only 72 tons at the Canton plant. The new machine, having a capacity of 112 tons in 16 hr., can handle easily the scrap from both the Canton and Columbus plants and the operating crew is cut to seven.

At the November meeting of the New York chapter of the American Society for Steel Treating Monday evening, Nov. 15, Frank B. Lounsberry, vice-president Atlas Steel Corporation, was the chief speaker. He took as his topic "Troubles with Tool Steel and Their Cures."

Letters to Foremen as Means of Increasing Steel Plant Safety

Importance of letters to foremen as a means for increasing safety in a steel plant was emphasized by Frank H. Rowe, safety director Portsmouth, Ohio, works, Wheeling Steel Corporation, in a talk before a meeting of the National Safety Council, held at the Hotel Statler, Detroit, during the last week in October. In a detailed discussion of the subject Mr. Rowe grouped the various types of such letters under four self-explanatory classifications, namely, letters of praise, of criticism, of information and of general interest. He explained that a well written letter from the safety director might create a much greater impression on the foreman than a casual conversation at the plant, when the foreman might have his mind occupied with his work. A personal interview following the letter would find the foreman much more able to appreciate it.

According to Mr. Rowe this form of safety work is better used sparingly than in large quantities. The foreman must not learn to regard the safety letter as



Exit Side of Piercing Mill, Which Pierces Billets into Seamless Tubes, for Making Timken Cups and Cones

just another bulletin from the office which can be passed over with a hasty perusal. Results from one letter do not warrant the immediate preparation of another.

The American Institute of Steel Construction has issued to the structural steel fabricators of the United States and Canada, who comprise its membership, a striking broadside dealing with the display of signs to call attention to the use of steel in bridge and building construction. The broadside is illustrated with photographs showing how members of the institute in New York are using signs to advertise steel. The signs contain the seal of the institute and carry the slogan "Steel Insures Strength and Security." They are prominently displayed on the steel work of the various construction operations.

New Universal Turret Lathe

Three Types of Head, Including Six-Speed All-Geared Type,
Feature 1½-In. Bar, 16-In. Swing
Machine

NEW automatic chuck mechanism, improved power feed arrangement and a self-contained cabinet-type motor drive are among the features of a new No. 4 universal turret lathe which has been placed upon the market by the Warner & Swasey Co., Cleveland.

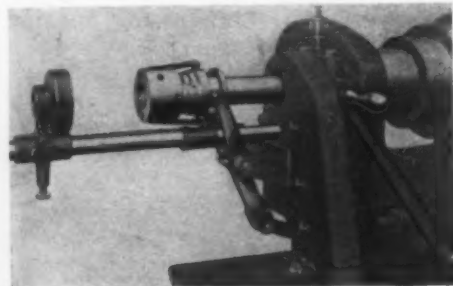
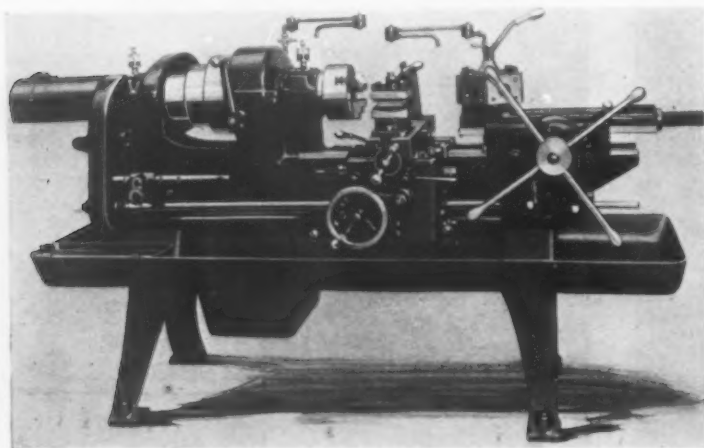
In addition to the above features the machine is available with three different types of head, a six-speed all-gear headstock, a six-speed cone head or an all-gear head with 12 speeds. The bar capacity of the machine is 1½ in. and the swing over the ways is 16 in.

Greater power to drive the spindle is delivered through the six speed all-gear head, it being put at more than twice as much as through the cone-head machine. Any one of six spindle speeds forward from 45 to 423 r.p.m. is instantly available by moving con-

quiring extreme power, or for work requiring wide variety of spindle speeds. Very heavy cuts may be taken and both "multiple cuts" and "combined cuts" may be operated at the same time on work ranging up to the capacity of the machine. It is stated that more than twice as much power is delivered through the 12-speed head as through the cone-head machine, and that this type is even more powerful than the six-speed type referred to above. The speed changes are obtained through sliding gears. The gears run in oil and the friction clutch may be adjusted conveniently.

Improved Automatic Chuck Mechanism

The automatic chuck and bar feed are operated by the long lever in front of the head. This grips or releases the work instantly. A pivoted operating yoke



The Six-Speed All-Geared Head Machine with Automatic Chuck and Cabinet Type Motor Drive is Shown Below. The automatic chuck bar feed is above and the six-speed cone-head machine with geared scroll chuck is at the left

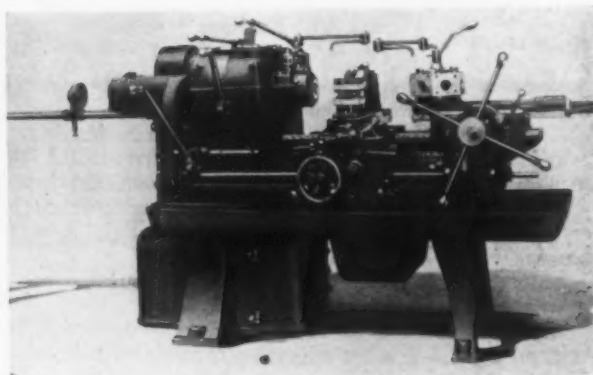
venient levers in the head. Two reverse speeds are provided. The gears run in oil and the shafts are mounted in Timken roller bearings. Babbitt-lined bearings are used for the spindle.

The power and wide range of speeds for the all-gear head are stressed as making possible the grouping of multiple cuts to operate simultaneously on the work. The six speed all-gear head is adapted for individual motor drive and a pedestal leg is provided in which the motor can be mounted at the head end of the bed. Both ends of the motor cabinet are hinged to make the motor easily accessible. Provision is made also for mounting the motor on the vertical plate fastened at the head end of the machine.

The cone type of geared friction head drive provides six spindle speeds, employing a three-step cone and back gear. This type provides the advantages of the No. 4 machine with the lowest investment. The type of belt shifter employed permits of rapid shifting from one step of the cone to another, and in certain types of quantity production work where spindle speeds are changed only occasionally, the cone type of head is often preferred. The back shaft is fixed in position with the gears always in engagement. The front spindle bearing is 3 in. in diameter and 4½ in. long, and the rear bearing is 2½ in. in diameter and 3¼ in. long.

Running both pulley countershafts forward at different speeds, the number of obtainable spindle speeds with the cone type is raised to 12. This, however, does not provide a reverse movement of the spindle.

The machine may also be provided with a 12-speed all-gear head, which is the same as used on the plain No. 4 machine previously described in these columns. This type of head provides 12 spindle speeds, ranging from 30 to 760 r.p.m. and is recommended for work re-



with rollers engaging the wedge is an improvement in the automatic chuck mechanism which substantially reduces the effort required to operate the chuck. A stepped wedge on the spindle, operating fingers provided with rollers, automatically adjusts the collet for slightly varying diameters.

The distinctive feature of the No. 4 universal turret lathe, the universal cross-slide carriage, is retained in the new design which provides a strengthened cross slide unit with power longitudinal feeds either left or right, and power cross feeds in either direction, as standard. The square turret provides four cutter positions in addition to the one in the rear tool post. These cutters may be operated simultaneously with the tools on the hexagon turret. Four independent, adjustable stops carried on a stop roll throw out the longitudinal feed. All feeds are available from the apron of the carriage itself, which facilitates making changes of feeds. Feeds may be reversed. In direction of feed,

the cross slide carriage is independent of the turret. A large graduated dial is fitted to the cross slide with adjustable indicators for gaging accurately the depth of cut. The square turret is quickly indexed without lifting from its seat. Accurate alinement and adjustment of the square turret are assured by hardened and ground tapered wearing surfaces, this patented feature being stressed as making possible accurate duplication of work.

The turret slide and saddle unit is of the company's standard type. A supplementary taper base and taper gibs provide for vertical and horizontal adjustments to assure permanent alinement of spindle and tools. The turret stud is tapered, providing adjustment for wear. Six power feeds are obtained through a gear box mounted in the front of the saddle. Independent adjustable stops operate for each turret face and may be set to throw out the power feed at any point desired.

Furnished Bare or With Bar and Chucking Equipment

The new No. 4 universal turret lathe is offered either as a bare machine or with a standard bar or chucking equipment. The bar equipment will handle the majority of the work within the cutting range of the machine, and consists of the following tools:

Flanged tool holder; single cutter turner; multiple cutter turner; end facing tool; center drilling tool, and self-opening die head.

For light work where piloting is unnecessary, or for center piloting on quantity work, the following plain set of chucking tools is offered: Multiple cutter head; flanged boring cutter; multiple turning head; drill holder; vertical slide tool, and floating tool holder. A set of chucking equipment with overhead pilots is also offered where additional rigidity is necessary, this set differing from the plain set of chucking equipment in only two tool stations. An overhead-piloted multiple-turning head is substituted for one multiple cutter head, and an overhead pilot bar is added to the multiple-turning head which already carries an ear for this purpose.

A taper attachment which will turn tapers up to 3 in. to the foot, in lengths of 6 in. is also available. The operation of the square and hexagon turrets is not affected by the installation of the taper attachment. A screw chasing attachment for cutting threads from 4 to 32 pitch, and operating by means of a leader and follower, may also be furnished. A micrometer screw attached to the cross slide provides a fine adjustment for the depth of cut.

Adds Two Smaller Units to Line of Hydraulic Broaching Machines

With the recent addition of two smaller units, the J. N. Lapointe Co., New London, Conn., is offering a complete line of variable-speed hydraulic broaching machines corresponding in size to its screw-type broaching machines.

The new machines, designated as the No. 2L and No. 2S, respectively, are identical except that the No. 2L has a 48-in. stroke and a maximum length of broach of 52-in. overall, and the No. 2S has a 30-in. stroke and 34-in. overall length of broach. The design of both of these units is similar to that of the company's Nos. 3L and 4W hydraulic machines previously described in THE IRON AGE.

A wide range of cutting speeds up to 33 ft. per min. with fast return of 60 ft. per min. are provided. The return speed of the ram can also be varied from 10 to 180 ft. per min., if desired. A low pressure relief valve on the return stroke opens automatically when the ram meets with undue resistance, eliminating breakage of broaches often caused by the tool being backed up against the inside of the faceplate.

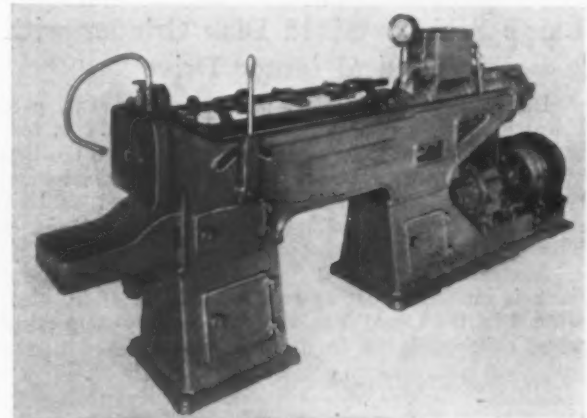
The draw rod of the machine is moved by oil pressure acting against the piston of a cast-iron cylinder. The latter is 5 in. in diameter and is mounted on the rear end of the machine bed, as in the larger machines. At 1000 lb. per sq. in., a pull of 15,000 lb. is exerted on the draw rod. The pressure is supplied by an LP-7 Hele-Shaw variable-delivery, multi-plunger hydraulic pump operating at 900 r.p.m. The pump is compact and is driven from a counter-shaft or by a direct-connected 5-hp. motor mounted as shown in the accompanying illustration of the No. 2L machine. As in the machines previously described, speed changes may be made while the machine is in operation or idle, and adjustments for predetermined rates of speed may be quickly made. The speed control is arranged as in the larger machines and the control shaft may be locked at any speed.

A feature stressed is the design of the pressure cylinder, in which ports are cored to eliminate piping and the possibility of leakages. Only two pipes are used in the entire system, these being of copper and 27 in. long. The fast return valve is cast separate from the main cylinder, and all cores are machined to remove sand or other gritty substance.

An automatic stop for controlling the length of the stroke is provided as on the larger machines, this stop being of spring and plunger type requiring no wrenches for adjustment. It can also be set for automatic return. The length of the stroke can be varied by means of this stop, or started in any position, either on the cutting or return stroke, by a hand lever, which provides complete control. This lever operates the pump

control through a system of linkage. The pump is connected directly to an automatic valve arrangement which is integral with the pressure cylinder. This valve is arranged so that during the return stroke of the ram, the oil which produces the pressure on the cutting stroke is transferred from one side of the piston to the opposite side without going through the pump. On the return stroke the oil is forced into the hollow draw rod and produces rapid return travel, which is an outstanding feature of these machines.

Another feature of the machine is the removable chip pan which materially reduces the time formerly



Hydraulic Broaching Machine With Wide Range of Cutting Speeds. The stroke of the draw rod is 30 in. and the maximum length of broach 34 in. overall

required to remove the chips which accumulate inside of the bed. This pan is located on the front end of the bed of the machine. As the broach is pulled through the work, the coolant washes the chips from the tool into this pan, which is perforated to permit the coolant to drain into the reservoir. Only a few seconds are required to remove and empty the pan.

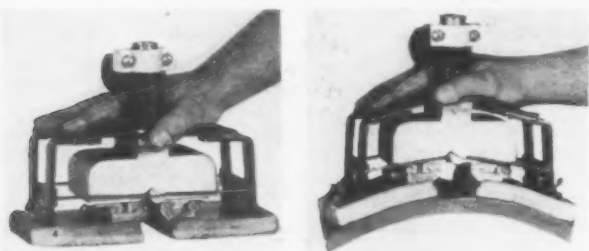
The floor space occupied by the No. 2S machine is 20 in. by 8 ft. 6 in. The weight of the machine, crated, is approximately 3500 lb.

Culvert pipe of copper bearing material; steel I-beam and riveted truss bridges; reinforcing bars; steel tubes or cylinders for bridge abutments and piers; steel I-beams and channels for bridge repairs; road making tools and equipment and miscellaneous iron work and structural steel are among the items described at length in a 72-page book illustrating some of the products of the Highway Iron Products Co., Ligonier, Ind.

Motor-Driven Tool for Finishing Concave, Convex or Flat Surfaces

The finishing of flat, concave or convex surfaces of wood or metal parts is the function of a rubbing machine placed on the market recently by Thompson Rubbing Machine, Inc., Binghamton, N. Y.

This tool is adapted for wet or dry sanding, rubbing and polishing operations, and is claimed to permit of savings in both labor and materials. It is motor driven



Flexibility of the Rubbing Head Permits the Operator to Work Over Flat, Concave or Convex Surfaces

and is available in floor and ceiling types. The floor type is portable and is made up of a suitable stand, swiveling arm, flexible shaft and rubbing head, the latter being shown in the illustrations herewith. The motor is mounted on the swiveling arm, which is counterweighted so that only the weight of the rubbing head is carried by the operator. The rubbing head operates by means of reciprocating motion and is designed to enable one-hand control. The swiveling arm permits of working over a large area. The machine as a whole is light in weight. The reciprocating pads are arranged so that they may be detached and changed quickly.

Large Self-Contained Disk Grinder with Vertical Motor Drive

Direct-connected vertical motor arrangement, providing a compact and self-contained machine, is a feature of a 72-in. disk grinder added recently to the line of the Gardner Machine Co., Beloit, Wis. The machine, designated as the No. 79, is also arranged so that either wet or dry grinding may be performed and is intended for flat surface operations of large area.

A steel disk wheel 72 in. in diameter and 1½-in. thick is employed. It is reinforced by a 40-in. steel plate, 1 in. thick, and is mounted on a heavy supporting wheel collar 29½ in. in diameter, taper fitted to the



The Vertical Motor Arrangement Permits of Compact Design. Either Wet or Dry Grinding May Be Performed

upper end of the rotor shaft, which forms the driving spindle of the machine.

The motor frame serves as the machine pedestal, the base being the motor end plate. This frame is arranged so that air circulates through it, but without circulating through and around the rotor or stator winding. The cool air is drawn up through openings in the base of the machine by fan blades located on the underside of

the disk wheel. After circulating around the motor frame, the air is forced out through eight holes spaced equally around the machine frame. A remote control push button switch is used and may be mounted at any point on the base. A cast-iron guard ring is fastened to the top of the base, and to it work holders, dressing device, etc., may be secured.

The spindle of the grinder is of large proportions and is mounted on radial and thrust ball bearings. The bearings run in oil and are carefully protected from grit and grinding coolant. Oil level pipes are brought from each bearing to the outside of the machine, for filling or draining the oil from the bearing housings.

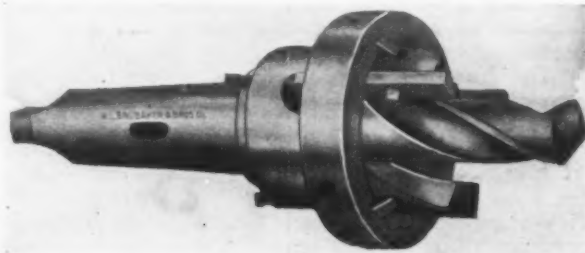
Deep corrugated G.I.A. disks of the company's design are used as the grinding member, and the dressing device provided is of the rigid horizontal bar type. A sliding block carrying the dresser cutters is forced back and forth across the abrasive disks to assure a well-trued up grinding member. A pneumatic pressing device is furnished for use in setting-up the abrasive disks, as in the company's previous 72-in. vertical spindle machine.

The upper or body portion of the machine forms a reservoir for water or other coolant for wet grinding, the capacity of this reservoir being 75 gal. Eight hand holes are provided in the bottom of the reservoir to permit of cleaning out the sludge, and each hand hole cover is drilled and tapped so that a water drain can be applied to any of them to suit the location of the machine. An overflow is provided at the top of the reservoir to prevent the coolant from getting into the spindle bearings. A motor-driven pumping outfit can be furnished. When the machine is used for dry grinding, the coolant reservoir serves as a breeching for the exhaust system, one or more of the hand holes being used to form a connection between the exhaust and this internal breeching.

The machine occupies floor space 7 ft. in diameter. The height of the disk wheel from the floor is 33 in. The power required for maximum duty is 40 hp. The weight of the machine for domestic shipment is 9000 lb.

Special Tool for Flue Sheets

A special tool for flue sheet work, combining the three operations of drilling, trepanning and chamfering, is being marketed by W. L. Brubaker & Brothers,



The Tool Combines the Three Operations of Drilling, Trepanning and Chamfering

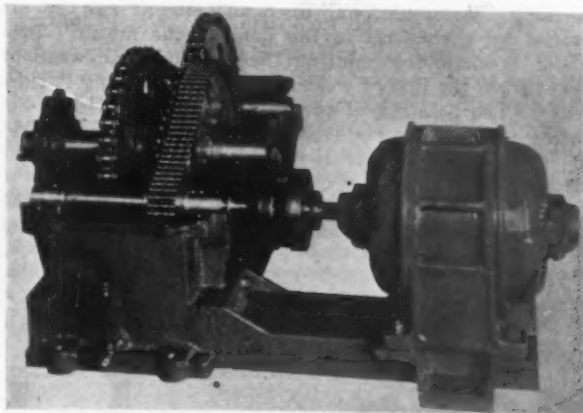
50 Church Street, New York. The tool is for flue sheet holes 3 in. and larger in diameter. It combines a standard type drill having a Morse taper shank, with special tools for trepanning and chamfering operations. A straight pilot for punched holes can be furnished in place of the drill. The tool may be taken apart, assembled and adjusted conveniently.

The tool is made in positive sizes with no diameter adjustments, but both the trepanning and chamfering cutters may be adjusted longitudinally to maintain the proper lengths after grinding. This range of adjustment is stressed as permitting the maximum use of the cutters. All cutting tools are of high-speed steel.

Performing the three operations in one set up is stressed as lowering production time, and a feature claimed is the low maintenance charges due to the long life and ease of replacement of the high-speed steel cutters. It is also stated that correct cutting sizes are more easily maintained, while the rigid method of holding the cutters permits fast and accurate operation.

Roller Chain Drive Used in Speed Reducer Design

Application of high speed roller chain in speed reduction units manufactured by the Washington Machinery Depot, Tacoma, Wash., is shown in the accompanying illustration.



Triple-Strand Chain Is Used on the Main Drive Shaft and Single-Strand Chain on the Two Reduction Drives

panying illustration. Triple-strand chain is used on the main drive shaft and single-strand chain on the two reduction drives, as shown. As with gear reducers, the entire mechanism is inclosed and the chains and sprockets run in oil.

This design of speed reducer is stressed as being unusually accessible, the use of roller chain permitting the transmission of power in the same direction without the use of idlers. The particular advantage claimed for this type of design is that the transmission efficiency and silent operation are preserved because of the inherent characteristic of roller chain in automatically absorbing wear on sprocket or chain through the mounting of the chain on machine-cut steel sprockets. The roller chain employed is that of the Diamond Chain & Mfg. Co., Indianapolis.

Exhaust Fan Discharges Material Through Projected Inlet

An exhaust fan arranged so that the material handled does not come in contact with the impeller but is brought in through a projected inlet and discharged



Material Does Not Come in Contact with the Impeller, But Is Discharged at Right Angles, as Shown

at right angles, the wheel being protected by a deflector plate, is being marketed by the Macleod Co., Cincinnati.

It is stated that because the material does not come in contact with the impeller, the life of the fan is prolonged and clogging and becoming out of balance are eliminated. The only duty imposed on the impeller is the creating of suction by centrifugal force, the air

passing the inlet causing a high suction. The material that may be handled includes grinding, polishing, tumbling barrel and sand blast dust, steel grit, wood chips, etc.

This machine, shown in the illustration, is known as the Macleod-Keeney Everlasting exhaust fan. It is of adjustable and reversible type, being adjustable to more than 30 combinations. It may be mounted on the floor or reversed and bolted directly to overhead timbers and the discharge outlet may be adjusted to point in any desired direction. Either the upright or suspended machines may be changed conveniently.

The housing, bearing standard, wheel and other parts are of steel. Double row, self-aligning ball bearings are used, but babbitted bearings of double ring-oiling type may be furnished if desired. The wheels are of special design with radial wings and with the exception of the hub, are of steel. Twelve sizes of the fan are available.

For Riveting Steel Barges

Rapid and economical operation is claimed for the pneumatic riveter here illustrated, which was designed by the Hanna Engineering Works, 1765 Elston Avenue, Chicago, for the riveting of steel barges.

The machine is the alligator type with dies horizontal, cylinder up, and when operated at 100 lb. air



The Riveter Is Mounted on a Cradle Carriage and Arranged to Travel on the Two Outer Edges of the Channels or Angles

pressure develops 50 tons on the dies, which is sufficient for driving $\frac{3}{8}$ -in. rivets. As the piston moves out of the cylinder, a wedge secured to the outer end of the piston rod moves downward between rollers fastened at the top ends of the two jaws of the riveter, thereby closing the gap and squeezing the rivet. The entire machine weighs approximately 1500 lb. and is mounted on a cradle carriage to run on the two outer edges of the channels, or angles, as shown. The operator rivets the full length of one seam and then moves the machine over to the adjoining seam and comes back riveting that one.

The cradle is provided with a "bucking up" lever or mechanism whereby the dead or immovable die may be nudged on and off the manufactured head of the rivet. The double flanged wheels of the cradle carriage are adjustable to various gage widths to compensate for variation in size of channels being riveted. The machine is moved along the channels from rivet to rivet by means of a hand wheel, chains, chain pinion and sprocket and wide face spur gears meshing with the double flanged wheels of the cradle carriage.

The die stroke characteristics of this machine are the same as the company's yoke riveter.

AUTOMATIC ARC WELDING HEAD

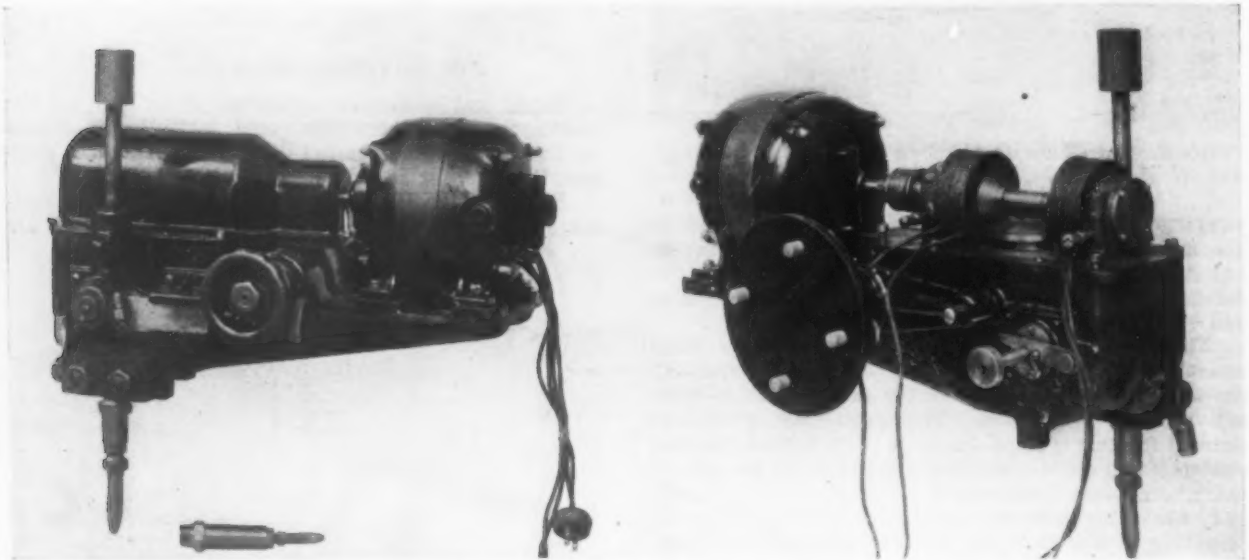
Push Button Starts Sequence of Operations— Constant Arc Length Maintained

Smoothness of operation, speed and accuracy are claimed for a new automatic arc welder, which is being placed on the market by the General Electric Co., Schenectady. The machine is arranged so that all that is required of the operator is to push a button to start the sequence of operations which produce the weld without further effort or skill on his part. The principal applications of the machine include the production welding of such standard products as pipe, tanks, cans, axle housings, etc.

The new welder starts the arc by first touching the electrode to the work and then withdrawing it, there-

equipped with a set of nozzles for 3/32, 1/8, 5/32, 3/16 and 1/4-in. wire. The speed of wire feed is adjustable by means of a selective gear changer which permits the gear ratio to be changed to adapt the speed of the feed rollers to the size of wire and the welding current used. Three gear speed changes can be made by moving the gear shift pin which extends from the rear of the gear housing. An additional finer adjustment can be obtained by a rheostat in the field of the motor. Provision is made for pointing the electrode backward or forward in the line of weld, and also for moving it sideways. The pointing of the electrode is obtained by rotating the head on its horizontal shaft, and the lateral movement by means of the handwheel on the front of the head.

The control equipment consists of a control panel, a meter panel and a push-button station. The control



The Electrode Is Fed To and From the Work and the Arc Length Maintained Automatically. The front of the machine is shown in the left-hand view and the rear of the machine at the right

after maintaining a constant arc length by feeding the electrode wire to the weld at the rate of speed necessary to replace the electrode fused into the weld. It is claimed that the new equipment will perform these operations more rapidly and with a greater degree of accuracy than is possible by the most expert hand operators.

The device incorporates the mechanism necessary for feeding the electrode to the arc, and consists essentially of a pair of feed rollers geared to a constant-speed motor through a magnetic clutch. The gearing and feed mechanism are contained in one housing to which the motor is bolted.

The feed rollers feed the welding wire through the nozzle to the arc, the distance and pressure between these rollers being adjustable. Each welding head is

equipped with a set of nozzles for 3/32, 1/8, 5/32, 3/16 and 1/4-in. wire. The speed of wire feed is adjustable by means of a selective gear changer which permits the gear ratio to be changed to adapt the speed of the feed rollers to the size of wire and the welding current used. Three gear speed changes can be made by moving the gear shift pin which extends from the rear of the gear housing. An additional finer adjustment can be obtained by a rheostat in the field of the motor. Provision is made for pointing the electrode backward or forward in the line of weld, and also for moving it sideways. The pointing of the electrode is obtained by rotating the head on its horizontal shaft, and the lateral movement by means of the handwheel on the front of the head.

The automatic arc welding head is available either separately or as part of a complete welding equipment including the necessary clamps and framework for holding the work.

Data on Bronze Bearings

Bronze bearing specialties manufactured by the More-Jones Brass & Metal Co., St. Louis, are described at length in an attractive book of 120 pages, published by C. M. Lovsted & Co., 2212 First Avenue South, Seattle.

The book is intended for ready reference and includes numerous line sketches and other illustrations, as well as dimension sheets of stock molds and patterns. Material stock in Seattle is also listed. The first section of the book is devoted to description of Artic and Tiger bronze locomotive crown bearings, Tiger bronze locomotive truck and trailer truck bearings, hub and crosshead liners, crosshead shoes, rod or wrist pin bearings, and rod bearings. Tiger bronze geared locomotive bearings, line shaft bearings, engine truck bearings, knuckle bushings and journal bearings are taken up in another section. Bronze sticks, bushings and motor

bearings; car journal bearings and gear bronze specialties and hydraulic bronze valve and pump parts are also described and illustrated. The concluding section, devoted to babbitt metals, contains suggestions intended to assure success in babbitting. The book is designated as catalog No. 261.

"Answering a Foundry Problem" is the title of an attractive pamphlet, designated as Bulletin No. 57, issued by the C. O. Bartlett & Snow Co., Cleveland. It describes the foundry equipment which the company furnished recently to the Saginaw Products Division of the General Motors Corporation, to the Mount Vernon Car Mfg. Co., and others. It is illustrated notably well and is particularly interesting because of the fact that the Saginaw Products Co. is the first malleable foundry to be completely equipped for continuous operation.



BOOK REVIEWS



Iron in Antiquity. By J. Newton Friend. Pages viii + 221, 5½ by 8 in.; 18 figures. Published by J. B. Lippincott Co., New York. Price, \$5.

The subject of this book is naturally of interest to all connected with iron and steel. From the standpoint of the archeologist we are living in the steel age, or, as some have expressed it, the alloy steel age, which is a direct outgrowth of the iron age. To every man in the industry the question arises from time to time how far back in the world's history the use of iron and steel extends. This question is answered in Doctor Friend's book in a most readable and instructive manner. By iron in antiquity he means iron and steel, treating iron in the broadest sense.

The short introductory chapter deals with the stone age and discusses the use of native metals such as copper and meteoric iron. He next takes up the growth of the copper age, the bronze age and the iron age as they are understood by archeologists, and he is very interesting in his remarks on the metallurgy of the bronze age. The care given to references is noticeable in this chapter and is a feature of the book. Its cultural value is also well brought out by such chapters as No. 4, where evidence in the various languages as to the antiquity of iron is carefully considered.

The next two chapters deal with iron as ornaments and currency. The wedding rings of the Romans were generally of iron and Egyptian iron beads are believed to date back to about 4000 B. C. Reference is made in one of these chapters to the cut steel jewelry, made so commonly in the eighteenth century, which declined in favor during the last century. The author raises the interesting question whether stainless steel might not be of value for cut steel buckles, hat ornaments, etc., and thus help to revive this industry. The discussion of iron bars for use as currency refers chiefly to the material discovered in various parts of England and this chapter includes a most interesting discussion of water clocks, with particular reference to the clepsydras or water clocks of Greece, Rome, Egypt, India as well as of Ancient Britain. The British type is claimed as a distinct invention.

The next chapter takes up iron in Europe and deals exhaustively with the time written of in the *Odyssey* and the *Iliad*, in other words, the Homeric Age. Iron seems to have been fairly plentiful, but was not used for military purposes. The Homeric swords, spears and defensive armor were of bronze. Owing to the methods of manufacture the iron was liable to bend or buckle when worked into thin shapes, as was natural when it is considered that it was direct iron and usually did not contain enough carbon to make good swords or spears. A quotation from Polybius of an invasion of Italy by the Celts, 223 B. C., bears on this question. It states that the long iron swords of the Celts were "easily bent and would only give one downward cut with any effect; after that the edges got so turned and the blades so bent that, unless they had time to straighten them with the foot against the ground, they could not deliver a second blow." Naturally warriors so armed were at a considerable disadvantage and in this case the invaders were defeated. A reference to material made in similar ways is given in Livingstone's "Missionary Travels," where he speaks of seeing a javelin of iron light upon the cranium of a hippopotamus and curl up like the proboscis of a butterfly.

An interesting chapter is devoted to Iron and the Vikings, with many quotations from the Sagas. The general unreliability of steel swords is again brought out. The subject of iron in Britain is then dealt with, the chief references being to the relics of the Roman occupation. Succeeding chapters then take up iron in India, Ceylon, Egypt, Palestine, Mesopotamia, Africa, China, Japan and finally the New World. The famous iron pillar at Delhi, 20 ft. in height above the ground, is described in detail. It dates back to about 300 A. D., and is built of iron disks, forge-welded together. The metal is low in impurities and very free from non-me-

tallic inclusions. Strangely enough, no mention is made of the Indian crucible steel, Wootz, from which the Damascus swords are believed to have been made. In his discussion of iron in Egypt, the author does not believe iron or steel was needed for the dressing of stones for the pyramids or the detailed carving of hieroglyphics.

A short final chapter links the past with the present by outlining the growth of the production of cast iron, and the striking developments of the eighteenth century, such as the use of coke in the blast furnace, the puddling process and the making of crucible steel.

G. B. WATERHOUSE.

English-German and German-English Dictionary of Shop Terms Used in the Foundry Industry (Deutsch-Englisches und Englisch-Deutsches Fachwörterbuch für das Giessereiwesen). Pages 60, 4¼ x 6 in. Published by the Verein Deutscher Eisengiessereien Giessereiverband, Düsseldorf, Germany. Printed by R. Oldenbourg, Munich, Germany. Price, 3 marks (72c.). The book may be obtained by writing to the headquarters of the Verein Deutscher Eisengiessereien Giessereiverband, Breitestrasse 29, Düsseldorf, Germany.

This is an English-German and German-English dictionary of shop terms commonly used in the foundry industry and was prepared for the use of the German foundrymen who attended the recent International Foundry Congress at Detroit, as well as for other German foundrymen who may have occasion to visit English-speaking countries. The English-German section will prove of similar value to English-speaking foundrymen visiting Germany or Austria. Readers of trade journals should profit through the use of the book, because a good command of a foreign language does not always carry with it a familiarity with the vernacular of the shop. Technical dictionaries have been available, but in most cases they devote little space to expressions common in the foundry industry.

The dictionary is simple, direct and in hand-book style. The book is printed in Roman type and the translations of the terms listed are generally confined to one or two words. Several pages at the end are devoted to conversion tables, giving English weights and measures and their metric equivalents.

Group Bonus Plan Outlined

The group bonus plan of wage payment is outlined in a booklet entitled, "The Better Wage," published by Ernst & Ernst, accountants, New York. In some cases, the pamphlet says, the nature of the business does not permit the use of the plan at all; in other cases, it may be applied profitably only in a limited way. Where the group plan is suited to the industry, however, it supplies a compelling incentive that materially reduces the need for supervision and inspection, eliminates complicated accounting methods, and cuts down losses in time and materials. On this point the pamphlet says, in part:

Carelessness, incompetence, or shirking by any one man in a group, or delay in lending a hand to a fellow worker, reduces the bonus of every man in the group. If a man spoils material, his lost time is a money loss sustained by the group. If one or more men do good work on material, before some one member of the group spoils it, the lost time is that much multiplied. It is to every man's advantage not to pass along to his fellow workers his own defective work and to be on the lookout for defects in work passed on to him.

Under the group bonus plan, the careless, lazy, squabbling, dishonest, dissatisfied or otherwise troublesome worker become answerable to his fellow workers as well as to the management. He must get down to business or get out. A new man coming into a group is helped along by the others, because it pays—and he must learn quickly. The former foreman, sub-foreman or gang boss is a group leader and

a productive worker. Work does not pile up at any one point in the group, because the bonus depends upon group output. . . . The need for supervision is minimized. Management goes into partnership with its men and makes the results of greater efficiency and lower costs, a mutual profit.

Outlining the experience of a large manufacturer of automobiles, the booklet states that the adoption of the group plan resulted in an improvement in productive efficiency ranging from 12 to 35 per cent and that savings were made in direct labor costs amounting to several hundred thousand dollars annually with great increases at the same time in the pay envelopes.

Labor Trade Agreements Compiled

More than 150 pages are required to tell the story of trade agreements in 1925, as published by the United States Bureau of Labor Statistics as Bulletin No. 419. Copies may be procured from the Superintendent of Documents, Government Printing Office, Washington, at 25c. each. Iron, steel and tin workers have brief mention, the brevity being due largely to the fact that only a relatively small proportion is unionized. Men in the metal trades—boiler makers, machinists, metal polishers, molders and stove mounters—account for about six pages.

There is no uniform method of making agreements, it is pointed out in the introduction. Probably the majority are not reduced to writing, but are simply oral understandings. Nearly 2000 agreements were added during the year to the bureau's collection, which now consists of 16,000. In this bulletin an attempt has been made to give one agreement typical of each trade, followed by extracts from other agreements that seem to be worth noting. In general, wages are not quoted.

Instruction Book on Junior Beam

The Jones & Laughlin Steel Corporation, Pittsburgh, has published a booklet of 56 pages covering its J & L junior beam, announcement of which was made a few months ago. The junior beam is a light weight structural section, especially designed for use in the construction of homes and other relatively small buildings.

The company announces that special warehouse facilities have been provided to insure prompt deliveries from stock in Pittsburgh and Chicago. The company will furnish the material coped or cut to other than right angles and will do special punching as well. It will also furnish necessary accessories such as special hangers, bridging, screed or nailing strip chairs, special clips for attaching metal lath and tools for fastening. The booklet gives a complete list of sizes, weights and properties of the junior beam, architectural details and instructions, loads that the beam will carry and other information required by the architect or builder.

Directory of French Steel and Iron Producers

The annual directory of steel manufacturers of France, the *Annuaire* for 1926-1927, is of the same bulky proportions as its predecessors, a book about 5 x 8½ in. in size of page but near 2½ in. thick, having some 1400 pages. Over one-third of the book comprises advertisements of the supply and construction trades serving the steel industry. These are classified into 28 divisions, so that there is in fact a double directory, one of the steel producers, and one of the supply industries, so to speak, those which supply the raw materials, build the plants and provide rolling machinery, furnaces, prime movers, material handling machinery and the like. The directory proper, besides an alphabetical arrangement of plants, gives a grouping according to products and also according to regions. Also, there is a listing of the organizations within the industry covering such matters as insurance against industrial accidents, homes for superannuated employees, credit, marine and transportation insurance,

anti-tuberculosis campaigning, etc. The *Annuaire* is published by the Comité des Forges de France, 7 Rue de Madrid, Paris (VIII), France.

Load Tables for Steel Construction

A new handbook, containing allowable load tables for use in designing steel construction, has just been issued by the American Institute of Steel Construction. It is intended for the use of engineers, architects, those who design steel construction and also engineering students.

The tables are based on an 18,000-lb. per sq. in. stress on extreme fibers of rolled shapes subjected to bending strains and a maximum 15,000-lb. fiber stress in columns, reduced by formula. These stresses are now allowable in over 60 city and State building codes in the United States and Canada. With a minor exception, they are recommended by the building code committee of the Department of Commerce and are approved by a joint committee of the American Society of Civil Engineers and the American Institute of Steel Construction, Inc.

The form of the tables of allowable loads for beams and columns is pointed to as an improvement over any heretofore produced in that each table includes all of the data pertaining to each structural shape and each type of plain and built-up columns. This form obviates the necessity of the user referring to different tables, as is necessary in the handbooks heretofore published.

This first edition of "Steel Construction Allowable Load Tables" is a preliminary publication. When certain sections, now being developed, are on the market and their characteristics determined, they will be included in the second and complete edition. However, for such shapes as are now being made, this book is a valuable aid to the designer of steel construction. The handbook is distributed by the American Institute of Steel Construction, Inc., 285 Madison Avenue, New York.

New Books Received

The Metallography of Steel and Cast Iron. By W. E. Woodward. Pages 143, 5¼ x 8¾ in., illustrated. Published by Crosby Lockwood & Son, Stationers' Hall Court, Ludgate Hill, E. C., London. Price, 15s.

Chemistry in the World's Work. By Harrison E. Howe. Pages 244, 6 x 8¾ in., illustrated. Published by D. Van Nostrand Co., 8 Warren Street, New York. Price, \$3.

Principles of Metallurgy of Ferrous Metals. By Leon Cammen. Pages 145, 6¼ x 9¼ in., illustrated. Published by the American Society of Mechanical Engineers, 29 West Thirty-ninth Street, New York. Price, \$2.

Diesel Engines—Marine, Locomotive, Stationary. By David Louis Jones. Pages 565, 6¼ x 9½ in., illustrated. Published by Norman W. Henley Publishing Co., 4 West Forty-fifth Street, New York. Price, \$5.

Laboratory Manual of Testing Materials. By William Kendrick Hatt and H. H. Scofield. Pages 182, 5¼ x 7½ in., illustrated. Published by McGraw-Hill Book Co., 370 Seventh Avenue, New York. Price, \$2.

Mechanical World Electrical Pocket Book 1926. Pages 338, 4¼ x 6¼ in., illustrated. Published by Emmott & Co., Limited, 65 King Street, Manchester, England.

Die Natürliche und Künstliche Alterung des Gehärteten Stahles. By Andreas Weber. Pages 76, 6½ x 9½ in., illustrated. Published by Julius Springer, Linkstrasse 23, Berlin W 9, Germany. Price, 9 goldmarks.

The functions of the industrial traffic manager, the information he requires, his value to a company and his place in an organization are discussed in the fourth "Business Organization" booklet, issued by the Policyholders' Service Bureau of the Metropolitan Life Insurance Co., New York. The first part of the publication contains an organization chart of a typical centralized type of traffic organization with descriptions of the duties of the traffic manager and his assistants.

Economic Position Unusually Good

America's Level of Production, Consumption, Foreign Trade
and Wages Highest Ever Attained—Price
Level Stationary

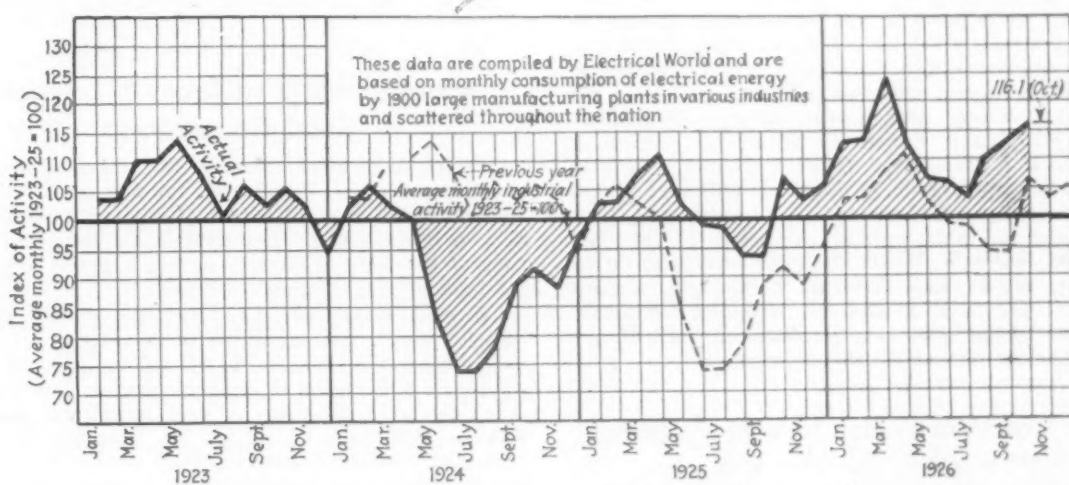
WASHINGTON, Nov. 26.—In the volume of production and consumption, in the physical quantity of exports and imports, and in the rate of wages, the fiscal year 1925-26 has never been surpassed in the history of the United States, declares Secretary of Commerce Herbert Hoover, in an economic review included in his annual report. On the whole, he points out, the country was able to maintain the highest standard of living in its history, a standard far above that in most other countries of the world at this or at any other time.

Mr. Hoover presents a table of major economic indexes to show the general progress of industry and trade in the past four years. Without exception, these indexes for 1925-26 stood higher than during the preceding year, and, with the single exception of mineral production, where the difference was insignificant, higher than in any other year covered by the table.

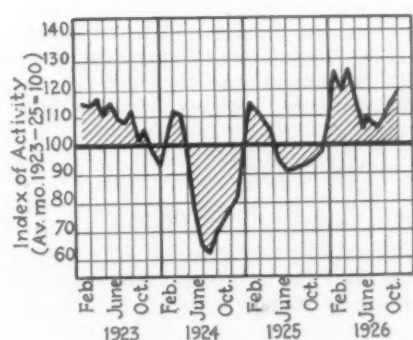
Taking 1919 as 100, the table shows that manufacturing production in 1926 took an index number of 126, against 118 in 1925; 115 in 1924 and 116 in 1923. Mineral production took an index number of 132 in 1926; 129 in 1925; 133 in 1924 and 119 in 1923. Building contracts took an index number of 142 in 1926; 112 in 1925; 108 in 1924 and 107 in 1923.

Manufacturing Improvement General

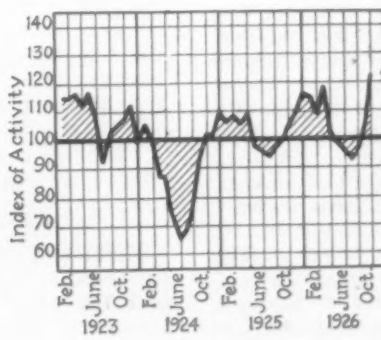
Secretary Hoover says that of special significance is the fact that manufacturing production, considered as a whole, showed a gain of 7 per cent, even as compared with the highly prosperous year 1924-25. The improvement was general through almost every branch of manufacturing industry. Although the prices of commodities in 1925-26 were practically no higher than in the preceding year, the value of sales of retail stores and mail order houses showed a considerable increase.



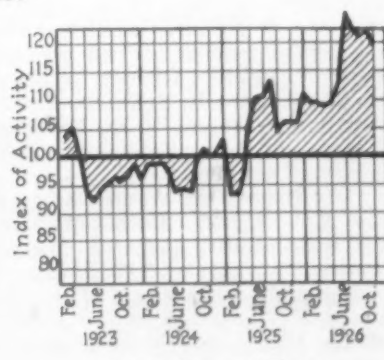
General Industrial Activity in the United States



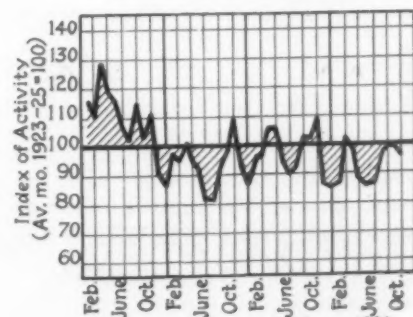
Metal Industries



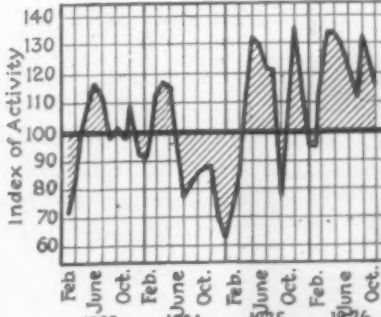
Textiles Industry



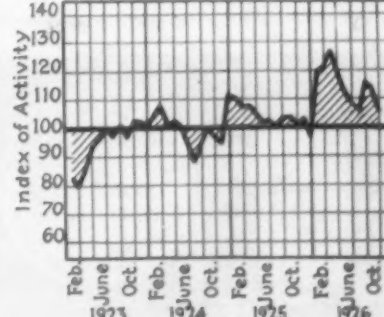
Stone, Clay and Glass



Leather and its Products



Automotive Industry



Lumber Industry

Barometers of Industrial Activity in the United States, Developed by "Electrical World" from Data of Monthly Consumption of Electric Power. No seasonal adjustment has been made

Only slight change has taken place in the general level of wholesale prices during the past four fiscal years. The absence of any sharp upward movement has shown the healthy character of American business, according to Mr. Hoover, and its freedom from the dangerous boom psychology. On the other hand, he points out, no sharp declines have reflected business depression or a general change in the relation between the volume of currency and credit and the volume of business.

With a single exception, no one of the nine great groups of products showed a change of more than 4 per cent between the price average for the fiscal year 1925 as a whole and that for the fiscal year 1926. The exception was the "miscellaneous" group, in which the sharp advance in rubber prices was a dominant factor. The price indexes show that metals and metal products took the lowest figure in the entire wholesale group, with an index of 128 upon the basis of 100 for 1913.

Cloths and clothing took the highest number, 184, with fuels and building materials next, at 175 and 174.

Price Indexes

(Based Upon Calendar Year 1913=100)

Wholesale prices:	Years Ended June 30—			
	1923	1924	1925	1926
General average.....	156	150	155	156
Farm products	139	140	153	152
Food	142	143	153	156
Cloths and clothing.....	193	194	189	184
Fuel and lighting.....	220	175	169	175
Metals and metal products	139	141	130	128
Building materials	188	182	174	174
Chemicals and drugs....	129	129	133	133
House-furnishing goods..	181	178	171	166
Miscellaneous	122	116	124	134
Retail prices:				
Food	143	146	150	162
General cost of living (a)	168	171	171	175

(a) Figures are averages of indexes for 3, 4 or 5 months distributed through the fiscal year, including in each case June of the previous year.

American Steel Co. Buys Terre Haute Mill

The American Steel Co. of Indiana, Inc., which recently purchased at a receiver's sale the mills and real estate of the Hoosier Rolling Mill Co., Terre Haute, Ind., will soon begin the production of concrete reinforcing bars and other steel products. The company will erect immediately a new open-hearth furnace to cost approximately \$50,000. Between 175 and 200 men will be employed at the plant when it is in full operation. At an organization meeting held on Nov. 15 the following directors were elected: George C. Foulkes, Joseph W. Ricker, Lovell E. Waterman, Frank J. Wolfe, John A. Templeton, Owen E. Pearce, Frank R. Miller, Isaac Silverstein, William E. Williams, Harry E. Merifield, Lynn C. Fehring, H. W. Bahde and Jacob R. Finkelstein. Officers will be George C. Foulkes, president; Joseph W. Ricker, first vice-president; Frank J. Wolfe, second vice-president; Edward D. Halsey, secretary; and L. E. Waterman, treasurer. Stock to the amount of \$150,000 has been subscribed. Mr. Finkelstein has been appointed general manager.

Ulster Iron Works Has New Management

Frank W. Hamilton, associated with several New York business men, has purchased the interests of Cadwallader R. Mulligan, in the Ulster Iron Works, located at Dover, N. J. Mr. Hamilton, formerly vice-president and general manager, is now president of the company. Henry T. Bradley, formerly manager of sales, is vice-president. John D. B. Vreeland will continue as secretary and treasurer. E. W. Kavanagh, associated with the sale of Ulster products for several years, has been appointed sales manager.

The Ulster Iron Works was established at Saugerties, N. Y., in 1827. In 1863 William Mulligan assumed the management, and with him was associated his brother, Cadwallader R. Mulligan. The latter in 1883 took over the management of the Dover Iron Works at Dover, N. J., and one year later he moved the business of the Ulster Iron Works, which had outgrown the

facilities at Saugerties, to Dover. Later the firm name was changed to Ulster Iron Works, Inc., and John Mulligan became the president, holding the office at the time of his death, which occurred last May. The new management, made up of men long connected with the company, will continue the business under the same name and without radical change in policy.

Awards Prizes to Jones & Laughlin Steel Corporation

Prizes have been awarded the Jones & Laughlin Steel Corporation, Pittsburgh, for the products it exhibited at the Sesqui-Centennial International Exposition in Philadelphia. The notification from the secretary of the Jury of Awards covers a grand prize, two gold medals and a medal of honor.

A gold medal was awarded the statue entitled "Steel," which was presented to the exposition by the corporation as a memorial to the accomplishment of the entire steel industry of America during 150 years of American independence. A gold medal was awarded Jalcase steel, brought out by the company this year, this steel combining elements that permit free cutting together with case hardening and forging. The grand prize was awarded for the cold-rolled and cold-finished steel bars which the company has been manufacturing for more than 70 years. At the Philadelphia Centennial Exposition of 1876 a medal was awarded the same product. The medal of honor was awarded to the J & L Junior beam, the new light-weight structural rolled steel building section brought out this year.

Resumes Cut Nail Works

LaBelle Works, Wheeling Steel Corporation, Thirty-first Street, Wheeling, W. Va., at which plates for cut nails are rolled and a nail factory is located, resumed operations Nov. 29, after a shutdown of five months.



METAL drums and signs for forest fire prevention are used by the Pacific Lumber Co., which has erected them throughout forests of California. One of the signs used is shown in the center of the group. The metal drums are provided to keep water for fire quenching purposes only.

STEEL CARS REPLACING WOOD

Gain Made by Railroads in Construction of Metal Freight Equipment

WASHINGTON, Nov. 26.—Reflecting the rise in the production of all-steel and steel underframe freight cars since no new wood cars are being constructed or have been added for some time, figures compiled from the Bureau of Railway Economics, based on annual reports of the Interstate Commerce Commission, show a striking change in rolling stock equipment. These figures have been worked into tables by the National Lumber Manufacturers' Association and cover the nine-year period 1916-1924, inclusive. The number of all-steel freight carrying cars in the service of Class I railroads of the United States in 1924 increased to 30.7 per cent as against 24.9 per cent in 1916. The number of composite or steel underframe cars in 1924 was 43.8 per cent as against 33.9 per cent in 1916. On the other hand, the percentage of wooden cars declined to 25.5 per cent in 1924 as against 41.2 per cent in 1916. An Interstate Commerce Commission safety ruling forbids the use of a wooden freight car between steel cars.

The number of freight carrying cars in service in 1924 was 2,348,725, while the number in 1916 was 2,253,233.

Using the percentages mentioned, the following table shows the trend in car production in 1924 as compared with 1916:

	1924	1916	Increase
All-steel	721,058	561,055	160,003
Steel underframe..	1,009,951	763,846	246,105
All wood.....	617,716	928,332	310,616*

*Decrease.

The gain in steel underframe construction was approximately 35 per cent while the increase in all-steel car production was about 28 per cent, as against a loss of 35 per cent in all-wooden car building. Of the all-steel freight cars in service in 1924, the figures show, 84 per cent were coal cars; 7.5 per cent box cars. There were no stock cars and no refrigerator cars of all-steel. Of the composite type, 62 per cent were box cars and 23 per cent coal cars. Of wooden cars in service in 1924, the records show, 63.3 per cent were refrigerator cars; 17.3 per cent coal cars; 7.5 per cent flat cars and 6.2 per cent stock cars.

Railroad reports on car depreciation show that the all-steel car has a life averaging 30 years and the all-wood car 20 years.

The proportion of steel, composite and wooden freight cars in service each year from 1916 to 1924, covering only Class I railroads and not including equipment owned by private car lines, is shown in the following table:

	Number	All Cars in Service		Steel Underframe,* Per Cent of Total	All-Wood, Per Cent of Total
		Per Cent of Total	All-Steel, Per Cent of Total		
1916...	2,253,233	100	24.9	33.9	41.2
1917...	2,302,059	100	25.9	34.9	39.2
1918...	2,325,673	100	26.3	35.8	37.9
1919...	2,361,102	100	27.0	36.8	36.2
1920...	2,322,122	100	27.1	38.2	34.7
1921...	2,315,692	100	27.7	39.0	33.3
1922...	2,293,392	100	29.1	39.7	31.2
1923...	2,315,612	100	29.4	42.8	27.8
1924...	2,348,725	100	30.7	43.8	25.5
1925...	2,357,226	100	...	...	...

*With wood superstructure (composite).

Fewer Stokers Sold

October sales of mechanical stokers, as reported by the Department of Commerce from 12 establishments, represented 112 units aggregating 40,780 hp. This is a sharp reduction from the September figure of 127 units aggregating 44,211 hp. It is considerably lower than the 53,481 hp. of October, 1925, and the 58,565 hp. of October, 1924. About 90 per cent of the rated power will go under water-tube boilers.

Fire-Extinguishing Equipment

October shipments of fire-extinguishing equipment, as reported by the Department of Commerce, made the second largest showing for any month this year, having been exceeded only by August. The October figures included 101 pumping engines and 48 of other types under the motor-apparatus group, compared with 90 and 34 in September and with 103 and 50 in August. For 10 months the shipments included 796 pumping engines and 427 other types of motor apparatus, compared with 819 and 448 respectively in the first 10 months of 1925.

Issue Report on Great Lakes Transportation

An exhaustive report on transportation on the Great Lakes has been issued by the Corps of Engineers, United States Army, in cooperation with the United States Shipping Board. The larger part of the report is devoted to an intensive study of the movements of bulk commodities, of which iron ore, coal and grain are the most important. Other commodities covered are limestone, petroleum, forest products, sand and gravel. The package freight movement is shown for each port, and the car ferry service is described.

The movements of ore, coal and grain on the Great Lakes are shown with unusual completeness. Iron ore is traced from the various ranges to the ports of shipment, thence by way of the Great Lakes to the receiving ports, and from the latter by rail to the various destinations. Coal moving from mines in Pennsylvania,

West Virginia, Kentucky and Ohio, is traced to Lake Erie ports and thence by water to the upper Lake ports, from which the movements are still further shown to the States of final destination.

The terminal facilities at the ports for handling bulk commodities are described, and information is given as to the costs of transportation, including all terminal charges involved between points of origin and destination.

Commerce Department Assumes Control of Commercial Aeronautics

The air commerce act of 1926, which places commercial aeronautics under the administration of the Department of Commerce, provides that the same general services shall be given to the navigation of the air which have been provided for more than 100 years in navigation of water. The department is charged with the duty of registering eligible aircraft, certifying to their air worthiness, examining the operating personnel and air navigation facilities and establishing air traffic rules; it is authorized to lay out airways, provide for lighting, mapping and emergency landing fields and in other directions furnishing assistance to aviators such as radio-direction, fog protection facilities, weather information and other aids to navigation.

Commercial operations have been undertaken in reliance on the provisions of the air commerce act, and it seems certain that the Post Office Department will be able to let contracts which will relieve it of all transportation of the air mail during the present fiscal year. Between 6000 and 7000 miles of airways are under actual operation at the present time, and it is the hope of the Department that 5000 additional miles will be added before June 30, 1927.

The results so far attained in the study of the occurrence, distribution and significance of alkali cyanides in the iron blast furnaces are contained in United States Bureau of Mines Technical Paper 390, which may be obtained from the superintendent of documents, Washington, at 10c.

INCREASE IN IMMIGRATION

September Shows 20 Per Cent Gain Over August and 32 Per Cent Over Year Ago

WASHINGTON, Nov. 26.—Immigrant aliens who came to the United States in September for permanent residence totaled 35,297, an increase of 6011 over the previous month and 8576 over the corresponding month of 1925, according to the Bureau of Immigration. Canada and Mexico continued the chief sources of immigration, contributing nearly one-half of the total for the month, 11,150 coming from Canada and 6252 from Mexico.

Of the European countries, Germany still leads the list, with 3833 immigrants in September, and is followed by the Irish Free State with 3617. Italy is next in the list, 1213 coming from that country; Scotland sent 1085; England, 926; Poland, 708; Sweden, 685; Norway, 674; and France, 536.

14,039 Skilled Workers in Three Months

Of the immigrants entering the United States in September, 5818 were skilled workers, while for the period from July through September the number in this class was 14,039. Included in the September list were 187 iron and steel workers, while this class of workers entering the United States in the three months was 406. Machinists to the number of 222 entered the United States in September, and from July through September the number of machinists coming in was 483. Metal workers entering in September and during the three-month period totaled 58 and 143 respectively.

What the Bureau of Standards Needs

WASHINGTON, Nov. 29.—In his annual report Director George K. Burgess points out the important needs of the Bureau of Standards for the current year. These include adequate support for test work and an appropriation for a new power plant, authority for the construction of which was granted at the last session of Congress. That American industry is more and more turning to applied science to aid in solving its

many and intricate technical problems is indicated in the report, which shows that the bureau maintains contact with industry through approximately 80 advisory committees and through a large number of research associates who are sent by industrial groups to work on problems of interest to their respective industries. Results are quickly applied by the industries concerned so that the public soon benefits from improved processes. One of the important investigations made included a program of 30 tests on brick walls in the 10-million pound compression testing machine, and other tests on steel columns.

Suspend Cancellation of Storage-in-Transit Privileges

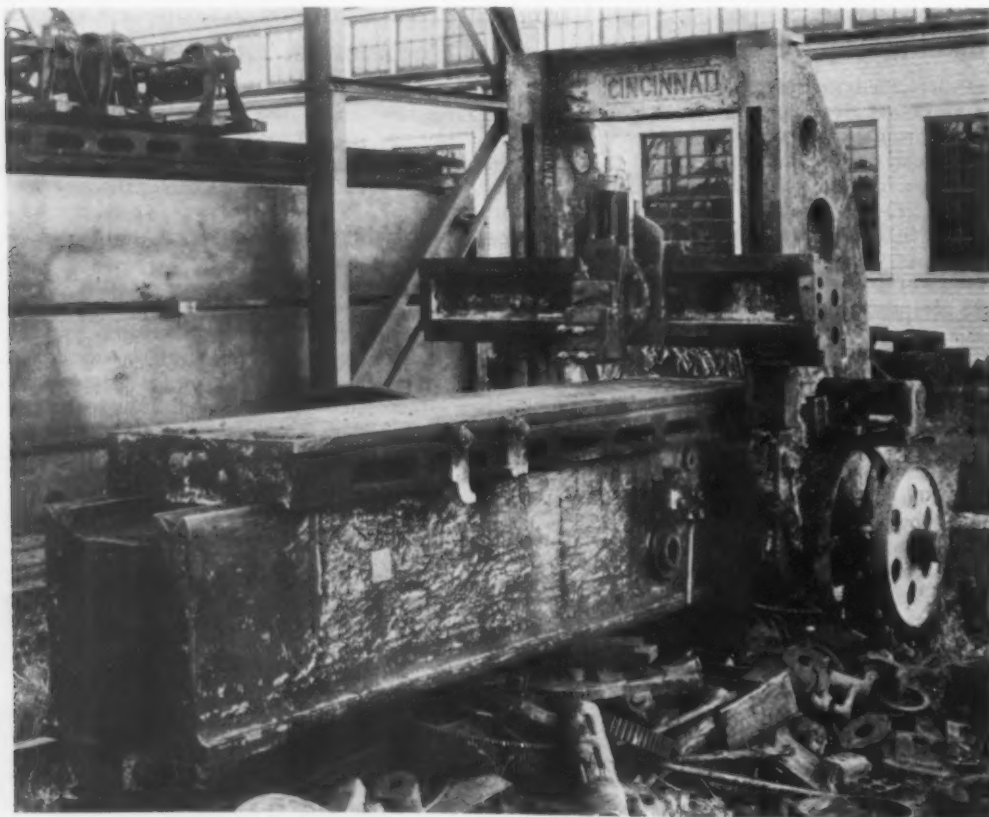
WASHINGTON, Nov. 30.—The operation of tariff schedules proposing to cancel storage-in-transit privileges on iron and steel products at Texas Gulf ports has been further suspended by the Interstate Commerce Commission from Nov. 29 to Dec. 29.

Suspend Tariff Proposing Minimum Weights for Pipe

WASHINGTON, Nov. 30.—The Interstate Commerce Commission has further suspended from Nov. 29 to Dec. 29 tariff schedules proposing minimum weights on iron and steel pipe and tubing in Official Classification territory.

Americans Investigate Russian Bauxite Deposits

WASHINGTON, Nov. 29.—An expedition sent by the Aluminum Co. of America to investigate aluminum-bearing deposits in the Soviet Union is now conducting research in the Batum region and the northern Black Sea coast, according to advices received here by the Russian Information Bureau. It is also stated that rich layers of aluminum-bearing materials were discovered in the Gandjinsk district of Azerbeidjan, where the commission's work has been completed.



WHAT So Rare, Asks the Cincinnati Planer Co., as the Picture of a Scrapped Planer? The machine here shown was in use approximately ten years and was discarded because it was so damaged in a fire that the repair cost was considered prohibitive.

CENSUS OF DISTRIBUTION

New Tabulation Favored as Adjunct to Census of Manufactures

WASHINGTON, Nov. 29.—Recommendation is made by Director Steuart of the Bureau of Census in his annual report that preliminary work be done as soon as possible to establish the best method to be followed in taking a census of distribution, and that the work be identified with the census of manufactures. At present the bureau is not authorized to collect statistics on distribution, but the importance of such statistics is indicated by Director Steuart, who believes such a census is essential. The report states that there are in this country over 1,000,000 independent enterprises engaged in distribution.

Director Steuart again emphasizes the necessity for cooperation to secure the best results in gathering statistical information. He states that this cooperation should exist not only among the statistical offices of the Federal Government, but also among those of the

State and city government and private organizations. Arrangement for cooperation is now being carried on between practically all Federal statistical offices.

Vast Number of Reports Handled

Almost 1200 chambers of commerce and boards of trade cooperated in taking the census of manufactures in 1925. The number of separate reports from individuals, corporations, institutions or other units which were received or handled by the Bureau of Census during the last fiscal year was 12,700,000. The bureau collects and publishes statistics of employment, wages, production and power for manufactures each second year, and of stocks, production, consumption, sales and various other facts concerning the leading key industries annually or at more frequent intervals. The purpose is to show the principal facts regarding all of the productive industries of the country. The data are collected largely by correspondence, but in part also through the employment of a large field force. During the fiscal year ended June 30, 1926, approximately 743,000 reports were received from the 282,954 establishments covered by these statistics.

PATENT OFFICE NEEDS

New Building, More Examiners, Higher Salaries Required for Proper Operation

WASHINGTON, Nov. 29.—More examiners are urgently needed if the Patent Office is to cope adequately with the constantly growing demands upon it, according to the annual report of Commissioner Thomas E. Robertson. During the two fiscal years 1925 and 1926 the Patent Office had annual appropriations amounting to about \$180,000 for the employment of 100 temporary examiners. For the current year only \$25,000 is available. As a result the Patent Office has been forced to reduce its examiners from 560 to 485, exclusive of the principal examiners. The report shows that in two years the new cases have increased by 10,000 and the amended cases by 48,000.

The commissioner again stresses the importance of increased quarters. As is well known, the housing facilities of the present building are entirely inadequate to take care of the increasing volume of business. Moreover, invaluable records are constantly in peril by fire.

Reflecting the high turnover in the examining corps, the report shows that during the last fiscal year no less than 104 of the technical and professional force resigned. The salary schedule, Commissioner Robertson states, should be revised if the high-caliber men required are to be attracted and held.

Volume of Business Handled

During the last fiscal year the office handled 110,030 applications, an increase of 6439 over the figure for 1925. With the exception of 1922, when patent applications withheld during the war were submitted in abnormally large numbers, the number of applications filed during 1925-26 was the largest in the history of the office. Applications for patents for inventions, designs and reissues increased from 82,213 in 1925 to 85,279 in 1926; and trademarks, labels and prints from 21,378 to 24,751. Fees collected and turned into the Treasury amounted to \$3,457,774, the largest figure for any year in the history of the Patent Office, and \$186,000 more than in the previous fiscal year.

Ferromanganese from Low-Grade Ores

WASHINGTON, Nov. 26.—Dealing with the problem of making ferromanganese from low-grade ores, the annual report of the Bureau of Mines says that, as a part of the work of the experimental blast furnace at the north central station, the bureau has produced about 150 tons of an alloy containing 5 to 15 per cent manganese and averaging about 0.60 per cent phos-

phorus. The bureau is now endeavoring to ascertain whether metallurgical treatment can be developed for separation of the iron, manganese and phosphorus. Preliminary tests indicate the iron can be reclaimed in the form of steel containing negligible amounts of sulphur; the manganese will be converted into an oxide and recovered in a slag that can be used as an artificial ore in the production of ferromanganese. This last phase of the work is the primary purpose of the investigation. During the year further laboratory studies on various phases of several methods for producing ferromanganese from the low-grade manganiferous iron ores of the Cuyuna range have resulted in the formulation of a program for the coming year. The main object will be to investigate pyrometallurgical methods based on selective oxidation and selective reduction.

Increases Capacity of Converter Steel Foundry

The Eagan-Johnson Steel & Iron Co., Crum Lynne, Pa., is the outgrowth of a company organized about 14 years ago, known as the Eagan-Rogers Steel & Iron Co. The aim of the organizers, D. C. Eagan and John Rogers, was to meet the need for small steel castings. After the closing of the plant of Isaac G. Johnson & Co., Spuyten Duyvil, N. Y., because the property had been taken over by the State of New York for improvements to the Harlem Ship Canal, A. A. Johnson, formerly of that company, became associated with Mr. Eagan, Mr. Rogers having died, and the name was changed to Eagan-Johnson Steel & Iron Co.

On account of increased volume of business it was found necessary to expand the plant. The construction work now completed increases the capacity to 600 tons per month.

The main foundry building has been extended 120 ft. so that it is now 100 x 320 ft. A wing 85 x 200 ft. has been added for the annealing, cleaning and chipping. Additional traveling cranes and molding machines have been installed and also Pangborn sand blast equipment and a new annealing furnace of the car type equipped with recording pyrometer.

After consultation with such authorities as L. B. Lindemuth and Bradley Stoughton, it was decided to continue the operation of the converter process for the present. In addition to ordinary carbon steel castings from those of a few ounces up to 6000 lb. in weight, special alloy steel and high and low-carbon castings will be made.

The plant is within trucking distance of Philadelphia and Chester and is on the main line of the Pennsylvania Railroad. Shipments may also be made by boat either from Philadelphia or Chester.

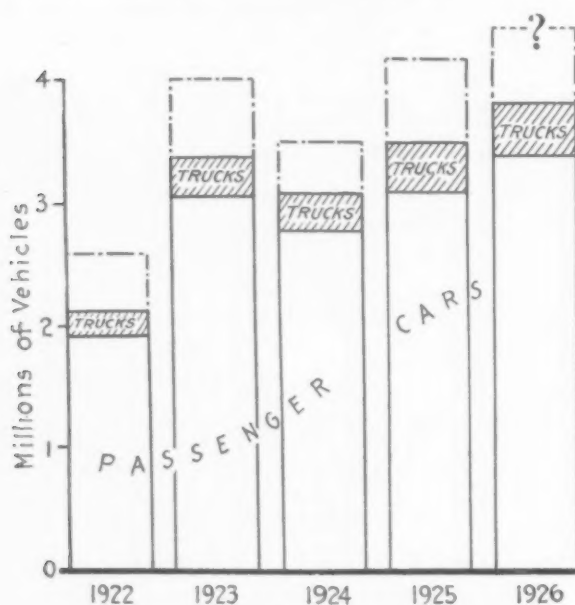
AUTOMOBILE PRODUCTION

Heavy Output in Ten Months Indicates High Record for Year

Despite a sharp slump in October, production of automobiles in the United States is certain to make a new high record this year. For the 10 months the figures are given by the Department of Commerce at 3,407,411 passenger cars and 428,931 trucks. This compares with 10-month figures of last year at 3,089,153 passenger cars and 407,828 trucks; with considerably smaller figures under both heads in 1924. The corresponding figures are shown in the table.

	10 Months			12 Months Total
	Passenger Cars	Trucks	Total	
1926.....	3,407,411	428,931	3,836,342	.....
1925.....	3,089,153	407,828	3,496,981	4,174,886
1924.....	2,771,719	307,187	3,078,906	3,504,862
1923.....	3,076,805	320,458	3,397,263	4,013,509
1922.....	1,916,462	204,244	2,120,706	2,586,445

October production in the United States is given as 288,848 passenger cars and 42,890 trucks. This is the



Solid Lines Show Production in First 10 Months. Dot-and-dash lines carry the totals of earlier years up through the 12 months, with an indication of where 1926 will stand

smallest number of passenger cars since January, comparing with 350,913 in September and 380,258 in August. The highest month of the year was April, with 383,907. The October figure is a particularly heavy drop below October, 1925, which with 394,096 passenger cars made the highest record ever achieved. These figures do not include Canadian production.

Except for July, the October truck output was the lowest since February. It compares with 46,428 in September and with 50,314 in April, which was the highest month of the year. It was a little less than the 44,323 of October, 1925, and much less than the record month, which was September, 1925, with 58,002.

British Steel Exports Increased in October—Imports Decreased

WASHINGTON, Nov. 29.—Registering the first actual recovery since the outset of the coal strike, British exports of iron and steel in October increased to 194,065 gross tons, a gain of 33,847 tons or 21.1 per cent over September, and imports amounted to 398,235 tons, a decrease of 47,469 tons or 10.6 per cent, according to a cablegram received by the Department of Commerce from Commercial Attaché William L. Cooper, London.

An almost complete reversal in the number of items reporting increases or decreases in imports took place in October when receipts are compared with September. In the earlier month there were only four items

of imports which failed to show increases over the month previous while in October there were but five classifications which did not report decreases when compared with September. Receipts of ingots and blooms decreased by the greatest tonnage, 11,138 tons, during October and steel bars decreased 7674 tons; structural steel, 5743 tons; plates and sheets, 5574 tons; pig iron and ferroalloys, 3370 tons; wrought tubes, 1616 tons; cast tubes, 1266 tons; rails, 1134 tons, and the products in the "all other" classification, 1057 tons. Receipts of hoops and strips, however, increased by 1104 tons.

Six items in the export classification, at variance from the remaining groups, showed decreases aggregating 4011 tons in October when compared with September. Exports of pig iron dropped off 2361 tons and rail exports declined 1526 tons. Losses were also shown in exports of steel bars, ingots, castings, and miscellaneous wire manufactures. Galvanized sheet exports increased by 16,653 tons; tin plate, 5461 tons; wrought tubes, 3143 tons; plates and sheets, 2620 tons; wire, 2051 tons, and railroad materials, 1247 tons.

Motor Industry of Great Britain

Production of 153,000 motor vehicles in Great Britain in 1925 is recorded in the 1926 book of the Society of Motor Manufacturers and Traders, 83 Pall Mall, London. Comprising 121,000 passenger cars and 32,000 commercial vehicles (these figures being subject to slight revision), this represents the highest output of any year listed. It compares with a previous high record of 132,000 total in 1924, and with less than 100,000 in preceding years. The trend line is sharply upward, pointing to probable gains in the neighborhood of 20,000 to 25,000 vehicles each year.

Many subjects are touched upon in the book, including employment and wages in the automotive industries, accidents as related to number of cars on the road, taxation of motor vehicles, mileage of good roads in Great Britain, price indexes of cars compared with the index of the cost of living, showing the cars to be at about the 1914 price, while the cost of living is 70 per cent above, etc. A considerable part of the book is occupied with the subject of exports and, in particular, brief digests are given of customs duties on all motor products in a large number of countries.

Exports of cars from Great Britain in 1925 numbered 29,061. This compares with 29,041 from Italy, 61,471 from France, 74,149 from Canada, and 302,924 from the United States. The exports represented 19 per cent of British production, against about 7½ per cent for the United States. British registration of cars, as of May 31 last, had reached 960,000.

Canadian Automobile Production

October production of automobiles in Canada is reported by the Dominion Bureau of Statistics to have comprised 10,595 passenger cars and 7075 trucks. This is much the largest number of trucks for any month of the past three years. It exceeds by about 45 per cent the September figure of 4871, which was the second highest. As to passenger cars, however, the October output was the lowest since last December, comparing with 12,624 in September and with as high as 21,429 last May. In October, 1925, Canadian output was 13,921 passenger cars and 1690 trucks.

Worm gear speed reducers, including a recent development in an unusually low ratio worm and gear, will be shown by the Horsburgh & Scott Co., Cleveland, at the National Exposition of Power and Mechanical Engineering to be held at the Grand Central Palace, New York, Dec. 6 to 11.

The Crane Co. has ordered a Heroult electric furnace of 3 or 7 tons capacity for its Chicago works from the American Bridge Co. It will be used for making alloy steels and will be installed in about four months.

MALLEABLE CASTINGS

Smaller Tonnage Made in October—First Ten Months Ahead of Last Year

Malleable castings produced by 139 identical plants in the United States are reported by the Department of Commerce to have amounted to 57,185 tons in October. This compares with 58,376 tons in the preceding month and with 68,122 tons in October, 1925. Except for July, the current figure is the lowest in more than a year. For the 10 months, however, with a production of 633,120 tons, a gain was registered of almost 4 per cent over the 610,966 tons in the first 10 months of 1925.

Shipments have run behind production every month since June. The October figure of 53,405 tons was the smallest since August, 1925. It compares with 54,635 tons in September, 1926, and with 59,605 tons in October, 1925. Shipments have run ahead of last year in the 10-month period by less than 2 per cent, the current figure being 596,799 tons, against 586,225 tons a year ago.

Orders booked in October represented the smallest tonnage in more than two years. The total of 45,490 tons was considerably below shipments, resulting in a decrease in unfilled orders. Operations were at 52.6 per cent of the monthly capacity of 108,638 tons, of the companies reporting.

German Trade with Russia Gains

WASHINGTON, Nov. 29.—Under a new trade treaty between Germany and the Soviet Union and with the aid of a 300,000,000 mark (\$71,400,000) credit for Soviet trade established under the auspices of the German Government, the German-Soviet trade turnover increased about 67 per cent during the Soviet fiscal year ended Sept. 30, according to reports received here by the Russian Information Bureau. The trade turnover for the fiscal year was about \$150,000,000, as compared with \$90,000,000 in 1924-25. During the same period the American-Soviet trade turnover decreased about 35 per cent.

During August and September the Soviet purchases on the German credits then arranged aggregated 85,000,000 marks, including mechanical equipment, 45,000,000 marks; lathes and tools, 21,000,000 marks; power and electrical equipment, 17,500,000 marks; gages and measuring apparatus, 1,500,000 marks. The orders included machinery valued at 30,000,000 marks for the metal-working industry, 12,000,000 marks for the coal industry, 16,800,000 marks for the oil industry.

French Machinery Exports Increase

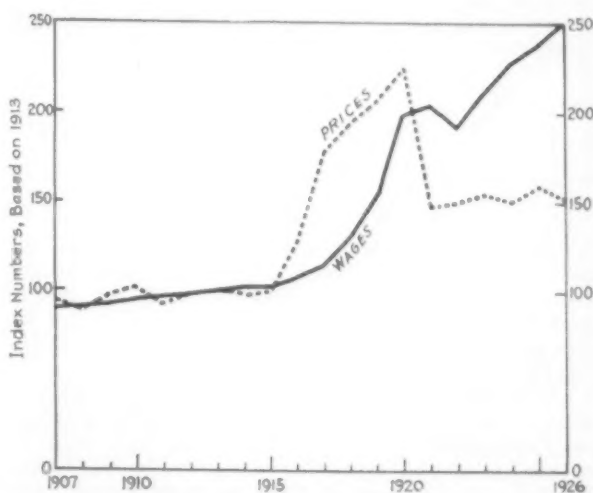
In 1925 the machinery exports of France amounted to 172,000 metric tons, according to a report to the Department of Commerce at Washington from Assistant Trade Commissioner Waller in Paris. This is contrasted with French machinery exports of 82,000 tons in 1913. The export trade of the United Kingdom and Germany in the same period has declined. In 1913 the United Kingdom exported 759,000 tons of machinery, but this had declined to 524,000 tons in 1924. Similarly, Germany exported in 1913, 671,000 tons, while in 1925 this volume had dropped to 443,000 tons. The factors which have been favorable to France in this trade, according to Mr. Waller, are increased steel capacity, affording a plentiful and cheap supply of material to machinery manufacturers, low labor costs and a currency of depreciating exchange value.

"While the production costs of French machinery manufacturers have been in terms of the depreciating franc," says the report, "their foreign sales have been on a gold basis at approximately world market prices. Thus, foreign markets have been particularly attractive to French machinery manufacturers and they have steadily increased their production to meet this growing export market."

Monetary stabilization in France, in the opinion of Mr. Waller, will be followed by a period of rising production costs and French machinery manufacturers will then be placed on a more nearly equal footing with those of other countries and a decline in French machinery exports might be expected.

Union Wages and Hours of Labor

More than 800,000 members of organized trades in 66 of the principal cities have been surveyed by the United States Bureau of Labor Statistics for its annual study. The average hourly wage rate in 1926 (May) was higher than in any preceding year, being 5.2 per cent above 1925 and 150.3 per cent above 1913. In the diagram is shown the story of the steady rise in wages from 1907 to 1926, with the wholesale cost of commodities, indicative of cost of living, as a companion curve.



While Wages Lagged Below Prices During the War Years and Until 1920, They Have Since Continued Sharply Upward, Despite a Sharp Drop in Prices Which Has Heavily Enhanced the Buying Power of Pay Envelopes

Because of a shortening of hours of labor per week, which in 1926 gave the lowest figure in the twenty years under survey, the rate of wages per week has not made the same percentage advance as the hourly rate. Nevertheless 1926 shows by far the highest weekly wage, having been 5 per cent above 1925 and 133.4 per cent above 1913. The last four years have shown successively the four high points.

Statistical Abstract of the United States

Continuing the annual series of statistical books depicting the growth and material progress of the United States, the forty-eighth number, that for 1925, of the Statistical Abstract of the United States has been issued by the Department of Commerce. It may be obtained at \$1 per volume from the Superintendent of Documents, Government Printing Office, Washington.

This present volume is of about 850 pages, 6 x 9 in., and is similar to those which have gone before. It follows the precedent set last year in omitting the extensive table entitled "Statistical Record of the Progress of the United States" which had been so prominent a feature of previous editions.

For comparative purposes several pages are devoted to a tabular presentation of statistics for foreign countries. These figures cover such items as railroads and other communication services, exports and imports, trade with the United States, etc.

As in preceding volumes, the amount of statistical information in this book is stupendous. It covers many items through the calendar year 1925, although in some cases, due to delays in compiling data, the latest figures are those for 1924.

RAILROADS SPEND \$629,000,000

Capital Expenditures for Year May Reach \$875,000,000, Largest Since 1923

Capital expenditures made by the Class I railroads during the first nine months of this year, for improvements to the transportation plant and for the expansion of its capacity, including improvements in and additions to railroad facilities, locomotives and cars, totaled \$629,000,000, according to a report submitted by the Bureau of Railway Economics, American Railway Association, at the annual meeting of that association held at the Biltmore Hotel, New York, Nov. 17.

This was an increase of approximately \$100,000,000 over similar capital expenditures made during the corresponding period last year.

On the basis of capital expenditures made during the first nine months this year, it is estimated that the total capital expenditures for the year will amount to \$875,000,000.

This estimate for 1926 compares with actual capital expenditures since 1920 as follows:

1920	\$653,267,000
1921	557,035,000
1922	429,273,000
1923	1,059,149,000
1924	874,743,000
1925	748,191,000
1926 (Est.)	875,000,000

Grand total (7 years).. \$5,196,658,000

This indicates an approximate aggregate of railroad capital expenditures, during the seven years since the close of the period of Federal control, of nearly \$5,200,000,000 or about \$750,000,000 annually and an annual average during the past four years of \$890,000,000.

While the actual expenditures made from Jan. 1 to Oct. 1, this year, amounted to \$629,000,000, the railroad managements during that period have actually authorized capital expenditures amounting to \$1,175,000,000. This includes \$475,000,000 in unexpended authorizations brought over from 1925.

Comparing the capital expenditures made during the first nine months in 1926 with those during the corresponding period in 1925, it appears that there were increases not only in the total of equipment purchases but also in all other classes of capital improvements.

Capital expenditures for equipment during the first nine months amounted to \$271,023,000, an increase of \$15,130,000 over the corresponding period in 1925.

For locomotives, expenditures amounted to \$72,324,000, an increase of approximately \$30,000,000 over the same period last year. For freight cars, \$143,265,000 were expended, a decrease of \$31,107,000 under the year before, while for passenger train cars, \$43,403,000 were spent compared with \$29,645,000 the year before. There was also an increase of \$2,500,000 in 1926 over 1925 in expenditures for other equipment.

Capital expenditures for roadway and structures in the nine months period amounted to \$358,070,000, an increase of nearly \$79,000,000 compared with the first nine months last year. Of this amount, \$124,084,000 was expended for additional track, an increase of nearly \$25,000,000 over 1925, while \$29,531,000 went for heavier rails, an increase of \$4,500,000 over the same period in 1925. For additional ballast, \$12,059,000 was expended in the nine months period this year, or \$4,000,000 more than was spent for that purpose in the preceding year. For shops and engine houses, including machinery and tools, capital expenditures amounted to \$29,115,000 compared with \$22,676,000 in

1925. All other expenditures amounted to \$163,281,000 compared with \$123,878,000 during the first nine months last year.

America's Large Scrap Heap Declared a Sign of Progress

HARTFORD, CONN., Nov. 27.—American industry has grown because it has the highest scrap heap in the world, and has consistently refused to be bound down by past practices solely because they were sanctified with age, declared Director Julius Klein, Bureau of Foreign and Domestic Commerce, Department of Commerce, in an address here on Friday, Nov. 19, before the New England Council, when he dealt with "Economy of Knowledge" in business. Dr. Klein said that in pre-war days it was a common European pastime in certain trades to scorn American competition as ephemeral because of the rank extravagance of American plants, because American industry had abandoned as trash great quantities of material which other peoples would find of value. He declared that the contrary is true, and attributed the growth of American industry to high scrapping.

"All too frequently do we find otherwise competent firms misinterpreting activity for prosperity," he said. "A leading element in the machinery industry last year had a turnover of \$14,000,000. Inquiries addressed to its various members as to business conditions brought back favorable responses, but the final check-up revealed that the ten companies in that line showed a total profit of only \$130,000. It would seem that instead of asking each other the usual 'How's business?' the query should have been 'How are profits?'"

Steel Barrel Output Less

Production of steel barrels in October, reported by the Department of Commerce from returns from 31 companies, was 493,363 units, compared with 511,118 in September. There has been a steady decline since the year's high of 626,812 in June. In October, 1925, output was 553,545 barrels.

Shipments of members of the Steel Barrel Manufacturers' Association in October, at 364,800, represented 45.6 per cent of capacity. Only 1024 barrels went abroad, the remaining 363,776 having been shipped into 36 States. New Jersey led, with 108,666; Pennsylvania, 49,795; New York, 40,113. The month's business was \$1,299,146.

Unfilled orders Nov. 1 were for 1,149,325 barrels, of which 821,479 were represented in the Association.

Employment in Ohio Foundries Shows Decrease in October

Employment in Ohio foundries and machine shops showed a decrease of approximately 2 per cent in October as compared with September, according to reports made by 63 firms to the Bureau of Business Research at Ohio State University. The bureau's index, with an average month in 1923 taken as 100, stood at 94.7 in October, as compared with 89.7 in October, 1925.

The daily average movement of freight cars on the steam railroads of this country in September was 32.7 miles, the highest average ever reported for any one month, according to the Bureau of Railway Economics, Washington.

Schedule of the next installments of the Business Analysis and Forecast, by Dr. Lewis H. Haney, Director New York University Bureau of Business Research, follows: Dec. 16—Activity in Steel Consuming Industries; Dec. 23—Position of Iron and Steel Producers; Dec. 30—General Business Outlook.

In This Issue

The belief that high wages in themselves create prosperity is a fallacy.—A high rate of production makes high wages economically justified. But if dividends suffer, then the lessened amount of money available for investment in new enterprise will kill prosperity.—Page 1573.

Noise detector warns of defects in roller bearings.—New device enables Timken to determine by the sound of a running bearing, registered on a dial, whether imperfections are present.—Page 1551.

Production increased 12 to 35 per cent by adoption of group bonus plan.—Automobile manufacturer saved several hundred thousand dollars in wages by establishing "production groups" of workers, and paying a bonus to groups instead of to individuals.—Page 1558.

Manufacturing production gained 7 per cent over previous fiscal year, says Hoover.—Regards the last 12-month fiscal period as the most prosperous in country's history.—Page 1559.

Automotive output will probably set a new record in 1926.—Production for the first 10 months was 3,836,342 vehicles, 9 per cent above previous record for the same period.—Page 1566.

Those who view suspiciously the sustained demand for steel overlook the fact that the market has changed radically in the past few years.—No longer is there the relation in buying activity among the different classes of buyers that formerly caused the market to move in wide swings. Each class of buyers now acts independently, stabilizing demand.—Page 1572.

Opponents of direct tax rebate employ unsound argument in asserting that tax has already been passed on to consumers.—Selling prices are not determined by cost plus taxes, but by competition and by law of supply and demand.—Page 1573.

Ford makes hot tops for ingot molds from waste foundry sand instead of from brick.—They are made in a jar ram-type molding machine, and are automatically conveyed through a continuous drying oven, and thence to the pouring bay.—Page 1544.

America is exporting less iron, steel and machinery and buying less from abroad.—Iron and steel exports fell off 6 per cent in October, while imports dropped 4 per cent. October machinery sales to foreign buyers were valued at only 28 million dollars, a 25 per cent decline.—Page 1602.

Segregation in ingots is reduced by slow teeming.—The quicker the rate of cooling, the less segregation. Slow teeming allows part of the solidifying action to take place while the mold is being filled.—Page 1551.

November pig iron output slightly higher, estimate shows.—Average daily production (estimated) was 107,883 tons, which is 330 tons per day above October rate. On Nov. 30 the number of furnaces in blast was 217, two less than the Nov. 1 total.—Page 1577.

High-carbon steel "freezes" more rapidly than low carbon.—Each per cent of carbon lowers the freezing point about 100 deg. C.—Page 1546.

Four 1500-lb. ingots poured at one time in new Ford steel plant.—Novel "pouring dish" permits group teeming. Small ingots make the steel more uniform and reduce segregation.—Page 1543.

Immigration increased in September.—The number of immigrants who came into the United States for permanent residence was 35,297, a gain of 21 per cent over August and 32 per cent over September, 1925.—Page 1563.

Hard spots in steel, which dull the edge of cutting tools, are caused by segregation of non-ferrous elements, particularly carbon.—Slow rate of cooling, permitting impure metal to be forced into gas holes, brings about segregation.—Page 1547.

Wages continue to rise while prices decline.—Government survey reveals that union wages are now 150 per cent above 1907 average while commodity price level has advanced only 50 per cent.—Page 1565.

The Iron Age, December 2, 1926

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Fosters Modernness in Industry

MUCH satisfaction may be taken by the metal-working industries in the improvements of modern factories. Many influences have been at work, but the provision of the facilities was left in no small measure to the metal-working field. Also, the initiative in adapting new methods and equipment to their own needs was taken by that same field.

Illustrations in these pages of plant interiors and exteriors serve as a record of the advances. Selected pictures over a term of years would show how step by step the mill, shop and factory has evolved. Executives of metal-working plants were early to appreciate the modern management movement. They have given us workshops which are truly pleasant places in which to work. The incidental feature of articles descriptive of some plant detail is that they carry suggestions of what has been done to supply airiness, orderliness, conveniences and other conditions contributing to high efficiency.

For News Summary See Reverse Side

Where Steel Exports Went in Ten Months

Canada Took 700,924 Tons, or 25 Per Cent of Total—Japan Retains Second Position with 208,451 Tons, Followed by Mexico with 86,882 Tons and Cuba with 73,816 Tons

Exports from United States, by Countries of Destination

(In Gross Tons)

	Steel Plates				Galvanized Sheets				Black Steel Sheets			
	October		Ten Months Ended October		October		Ten Months Ended October		October		Ten Months Ended October	
	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925	1926	1925
Total	10,550	7,971	113,151	83,527	12,104	9,679	142,250	132,250	15,119	6,999	140,787	72,793
Canada	1,979	7,252	92,300	65,156	2,294	1,738	37,756	21,618	5,383	3,280	53,429	36,025
Japan (a)	43	106	480	916	272	537	4,735	3,473	8,567	2,092	72,692	25,679
Cuba .....	.....	.....	1,194	1,031	602	1,169	7,290	9,472	26	32	469	1,033
Philippine Islands .....	.....	.....	.....	244	1,761	907	19,452	14,365	.....	.....	.....	.....
Mexico	48	.....	1,054	1,021	527	695	7,914	6,371	.....	.....	.....	.....
Argentina .....	.....	.....	.....	.....	303	541	8,132	34,599	34	.....	400	747
Chile .....	.....	.....	.....	.....	322	62	.....	1,583	.....	.....	.....	.....
Colombia .....	.....	.....	.....	.....	803	503	.....	1,826	.....	.....	.....	.....
Steel Rails												
Barbed Wire												
Plain and Galvanized Wire												
Total	13,917	9,437	144,930	140,270	2,999	6,148	46,171	59,355	1,844	3,195	27,784	30,560
Canada	2,234	2,831	22,745	19,816	451	242	4,883	1,626	829	1,087	10,441	12,088
Japan (a)	5,517	3,249	28,035	7,859	.....	.....	.....	.....	58	.....	1,002	641
Cuba	2,873	262	13,561	33,811	98	71	2,138	3,678	168	123	1,174	1,940
Philippine Islands	594	209	5,029	3,373	188	.....	4,675	1,140	.....	4	.....	879
Mexico	892	399	8,521	4,761	135	78	4,937	4,584	64	425	5,009	792
Argentina	872	.....	.....	.....	100	1,282	1,894	8,175	23	353	2,833	1,034
Chile	48	872	8,650	5,606	.....	.....	.....	.....	.....	.....	.....	110
Colombia	2	243	4,937	1,864	631	659	5,322	4,106	.....	.....	.....	.....
Brazil	571	.....	10,110	6,030	121	569	6,188	12,887	.....	.....	.....	.....
Honduras	5	132	.....	1,314	.....	.....	.....	.....	.....	.....	.....	.....
Australia .....	.....	.....	.....	.....	.....	.....	.....	.....	183	298	668	2,102
Tin Plate												
Plain Heavy Structural Steel												
Steel Bars												
Total	27,950	14,712	190,885	128,056	10,922	13,796	131,022	82,452	10,562	8,704	111,790	91,090
Canada	3,101	1,865	40,422	31,862	8,864	11,895	100,654	56,135	6,704	5,680	68,376	51,581
Japan (a)	5,448	4,586	35,685	30,481	1,046	.....	5,314	992	167	24	2,027	965
Cuba	282	69	1,897	4,220	167	605	0,294	17,338	203	500	2,084	5,175
Mexico	656	389	7,616	4,643	.....	51	.....	.....	273	.....	3,041	.....
Argentina	2,578	871	11,007	5,996	.....	.....	.....	.....	.....	.....	300	.....
Chile	734	389	5,373	5,212	57	152	5,594	1,759	224	.....	2,582	.....
United Kingdom .....	.....	.....	.....	.....	.....	.....	.....	.....	1,657	.....	20,872	.....
China	3,136	1,342	18,259	11,633	.....	.....	.....	.....	.....	.....	.....	.....
British India	2,239	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Italy	14	.....	9,943	.....	.....	.....	.....	.....	.....	.....	.....	.....

(a) Including Chosen (Korea).

Destination of Iron and Steel Products Exported From the United States

(In Gross Tons)

Country of Destination	October, 1926	January Through October	
	1926	1926	1925
North and Central America and the West Indies	88,517	925,589	773,944
Canada and Newfoundland	69,659	700,924	492,679
Cuba	8,269	73,816	124,863
Mexico	5,910	86,882	89,836
Guatemala	414	9,261	6,111
Salvador	277	12,630	13,975
Panama	545	6,746	13,007
British West Indies	464	7,776	7,209
Other West Indies	2,288	14,873	14,389
Other Central America	691	12,681	11,875
South America	17,830	278,083	268,564
Argentina	4,323	46,625	78,202
Brazil	2,732	41,120	40,205
Chile	2,391	51,674	38,647
Colombia	3,956	49,830	63,032
Peru	1,398	29,475	13,177
Venezuela	2,286	49,786	26,251
Other South America	744	9,573	9,050
Europe	10,958	113,628	122,787
France	1,000	8,591	6,567
Italy	30	22,738	41,229
Rumania	21	2,345	1,133
Russia	48	2,863	1,486
Turkey	247	2,751	1,221
United Kingdom	6,304	50,533	42,416
Other Europe	3,275	23,807	28,735
Far East	51,952	416,190	258,174
Australia	3,415	22,974	18,809
British Malaya	2,175	10,450	4,913
China	4,132	31,773	48,270
Dutch East Indies	7,376	33,398	19,293
India	2,495	29,954	17,626
Japan and Chosen	27,071	208,451	102,053
Kwangtung	413	19,878	1,739
Philippine Islands	4,299	49,799	38,583
Other Asia and Far eastern markets	576	9,513	6,888
Africa	2,846	15,539	25,760
British South Africa	1,612	7,927	21,817
Egypt	783	6,115	2,644
Portuguese East Africa	285	1,928	800
Other Africa	166	559	499

MUCH heavier shipments to Canada of nearly all items feature the analysis above. In ten months the advance was 46 per cent, from 295,907 tons to 431,006 tons. Black sheets and steel rails to Japan trebled in the ten months, compared with 1925. Japan took more than 4 times as much tonnage of black sheets in October this year. Structural material sent to Canada was nearly doubled and steel bars increased 33 per cent. China took a large quantity of tin plate, ranking third, after Canada and Japan.

ORE CRUSHERS FOR CHILE

Two 500-Ton Units Present Shipping as Well as Production Problems

What are regarded as the two largest ore crushers ever built are now being shipped from the West Allis works of the Allis-Chalmers Mfg. Co., Milwaukee. They are of the gyratory type and weigh 500 tons each. They were designed and built for the Chile Exploration Co., a subsidiary of the Anaconda Copper Mining Co. for installation at Chuquicamata in the Andes Mountains near Antofagasta, Chile—5000 miles from the shipping point.

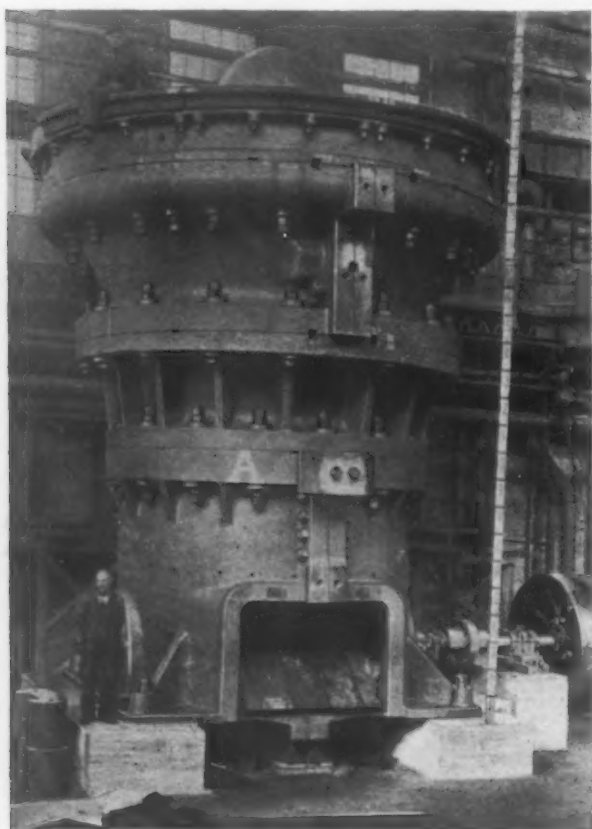
The massiveness of these machines may be noted from the accompanying illustrations. The two receive-

with heavy derricks for such work, and finally building special cars for transporting over the steep grades of the last haul over the mountain railroad.

Shipment will be made by rail to New York, 25 cars being required to handle the two crushers complete. The ocean shipment will proceed by way of the Panama Canal, following down the west coast of South America to Mejillones, a port near Antofagasta where the transfer to lighters will be made.

Reorganized as Young Engine Corporation

The T. W. Young Engine Co., Oil City, Pa., has been reorganized under the Ohio laws as the Young Engine Corporation, and has purchased the plant and



Weighing 500 Tons Each, the Crushers Are Credited With Being the Largest Ever Built. The largest parts of the machines weigh 60 tons. The hopper openings take a carload of 70 tons of ore at one time and each crusher handles from 2000 to 2500 tons an hour. Twenty-five freight cars are required to handle the two crushers and spare parts.

ing openings for each machine measure 5 ft. across and will easily permit the dumping of a carload of ore weighing 70 tons. Some of the largest pieces of ore will weigh as much as seven tons and all will be crushed to a product 12 in. and finer; each unit will handle from 2000 to 2500 tons of ore an hour. The crushers will be driven by two 500-hp. motors, rolling mill type, directly connected to the crusher countershafts through flexible couplings.

The hardness of the copper ore to be crushed has necessitated very heavy design. The main frame, top shell, and spider, together with the steel suspension mechanism and running gear are of steel castings and the main shaft is a steel forging. The design has followed the Allis-Chalmers Superior McCully Gyratory type, which will classify these machines as short shaft crushers.

The problem of shipping these extremely heavy parts was complicated by the necessity of handling them from the steamer to lighters in the open sea at Antofagasta, Chile, and the final transportation on a 30-in. narrow-gage mountain railroad to an altitude of 9500 ft. This presented a transportation and rigging problem with a combination of difficulties that could be met only by sectionalizing the crushers, arranging for ocean shipment on the Chile Exploration company's steamer, Chilcop, which is especially equipped

equipment of the Precision Gear Blank Co., Canton, Ohio. The plant will be put in operation this week and drilling engines, compressors and various kinds of oil and gas field equipment will be manufactured. The officers and directors of the new corporation are as follows: W. T. Young, president and manager; P. B. Belden, vice-president; James K. Lynch, secretary; G. A. Leonard and H. E. Patrick.

The fifth National Exposition of Power and Mechanical Engineering will comprise more than 475 exhibits, occupying over 160,000 sq. ft. on four floors of the Grand Central Palace, New York. The exposition, held next week at the same time as the annual meeting of the American Society of Mechanical Engineers, will be open daily from noon until 10 p. m. In addition to power generating and accessory equipment, heating, ventilating and refrigerating machinery will be shown, as well as power transmission apparatus, machine-shop and welding equipment.

The tenth annual sales conference of Oakite Products, Inc., 22 Thames Street, New York, will be held Dec. 6 to 9 inclusive. A comprehensive program has been developed covering the use of industrial cleaning materials and methods in a wide variety of industries.

Electrochemists Discuss Pure Metals

High Conductivity Copper—Nickel Free of Sulphur— Electrically Refined Lead—Pure Zinc, Aluminum and Tin

ONE of the most interesting meetings which the New York section of the American Electrochemical Society has held in many months was the November session on Nov. 19. Following an informal dinner, the evening was devoted to a symposium on pure metals. The representative speakers from some of the leading producers of copper, aluminum, nickel, lead and zinc discussed some of the latest developments in these industries, with particular reference to pure metals. A brief account of the addresses follows:

Pure Copper

S. Skowronski of the Raritan Copper Co., Perth Amboy, N. J., displayed samples of very pure copper of 106 per cent conductivity. He discussed the preparation of the pure metal. In a paper crammed to the limit with technical data, he traced the experimental effects of metals and metalloids on the conductivity of copper, and on each other in the copper. Those elements forming alloys with copper have only a slight effect on the conductivity; those forming insoluble compounds or which themselves are insoluble in the copper, have a very large effect. Their effect is out of proportion to the amount of material present. These materials locate in the crystalline boundaries.

Mr. Skowronski's conclusion was that the conductivity of copper is not at all a criterion of its purity. The copper producers and manufacturers are now engaged in intensive research to determine all the factors in the production of very pure copper and the effect the impurities have on the conductivity. This monumental work is now well under way. Its extension into the effect that impurities will have on other physical properties of copper is expected to be completed in the next five years.

Commercially Pure Aluminum

E. V. Pannell of the British Aluminum Co. presented a paper on pure aluminum, now the fourth most important metal in point of tonnage among the non-ferrous metals but second in point of volume, which is a direct measure of its utility. He discussed the production of pure alumina, one of the greatest sources of contamination affecting the purity of the metal. He pointed out the lack of suitability of many bauxite deposits for aluminum production. New methods of refining the ore were touched on and the production of the pure aluminum of the present date, 99.98 per cent pure. Its production is not as yet on a commercial footing.

Corrosion Resistance of Pure Nickel

B. J. McKay of the International Nickel Co., New York, spoke of the remarkable strides in the industrial application of pure nickel tubes and other equipment in the food and milk industry. Nickel, practically sulphur free, is now produced on a commercial scale. This was not possible only a decade ago. Chemically pure nickel shows greater corrosion resistance than does its alloys or nickel with slight amounts of impurities. It has higher conductivity but, in the electrical industry, nickel is valuable for its resistance, not its conductivity. The pure nickel will run 99.9 per cent nickel plus cobalt. Mond nickel made by the carbonyl process is free of cobalt.

Lead of Unusual Purity

W. A. Cowan of the National Lead Co., New York, discussed pure lead. He showed samples of double electrically refined lead which analyzed 99.99943 per cent lead; 0.00024 per cent antimony; 0.000057 per cent copper; 0.000193 per cent iron and 0.00008 per cent zinc, giving total impurities of 0.00057 per cent.

The perchlorate bath with clove oil addition agent was used for this work. At the present time the National Lead Co. is doing considerable work on research of the physical properties of this pure lead. Pure lead shows much larger crystals than does lead with small amounts of impurities.

Spectroscopically Pure Zinc

H. M. Cyr of the New Jersey Zinc Co. presented a paper tracing the development of spectroscopically pure zinc. The abnormally large effect of traces of impurities in zinc metal was pointed out. In regard to the properties of zinc, the literature is decidedly contradictory as different workers employed materials of varying purity. Spectroscopically pure zinc was prepared by repeated fractional distillation to produce a product 99.99996 per cent pure. This material is untarnished by exposure to air and shows a remarkable resistance to solution by hydrochloric and sulphuric acids, while nitric acid has a much greater action than on ordinary zinc metal. Mr. Cyr discussed the properties, both chemical and physical, of this new metal at considerable length. Cadmium of similar purity has also been produced. G. P. Fuller of the Niagara Electrolytic Iron Co. was unable to be present to present a paper on pure iron.

Pure Tin

C. L. Mantell, Pratt Institute, Brooklyn, and secretary of the section, spoke briefly on pure tin, reviewing its properties and preparation by the electrolytic method, giving metal 99.98 per cent pure. Work is now in progress on the preparation of exceedingly pure tin from especially purified stannic oxide by hydrogen reduction. The economic side of pure tin production by electrolytic refining was of considerable interest and aroused a large amount of discussion.

Columbia Steel Corporation Buys Sheet Mill

SAN FRANCISCO, Nov. 27.—The Columbia Steel Corporation, largest steel-producing company on the Pacific Coast, has taken over the Pacific Sheet Steel Corporation, South San Francisco, Cal., a subsidiary of the Metal & Thermit Corporation, New York. The announcement of the merger was made jointly by W. E. Creed, president Columbia Steel Corporation, and by F. H. Hirschland, president Metal & Thermit Corporation. The consolidation has been consummated on a stock-exchange basis, with details as to the amount paid withheld. The plant represents an investment of \$2,000,000, and it has a monthly capacity of 3500 tons of sheets, covering a full range of sizes. As a result of the merger the business of the Pacific Sheet Steel Corporation will be conducted as a part of that of the Columbia Steel Corporation, which produces coke, pig iron and cast iron pipe at Provo, Utah, and sheets, bars and wire products at Pittsburg, Cal.

Production of Cutlery and Edge Tools

WASHINGTON, Nov. 29.—Establishments engaged primarily in the manufacture of cutlery, other than silver and plated ware, and of edge tools reported such products valued at \$75,831,331, and other products valued at \$4,559,440, making a total of \$80,390,371 in 1925, according to the biennial census of manufactures, as reported to the Department of Commerce:

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The New Steel Market

THE principal thing that experience in the steel market teaches is that things change. The useful information is not the precedents as a guide to the future, but the breaking of precedents as a warning not to look for repetitions.

The steel market of the past few years is an entirely new market, and one cannot well give too much attention to that fact. Even now errors in judgment are observed because this fact is not fully realized. Easily discerned is a feeling in many quarters that activity in steel "has lasted too long already," whence arises suspicion that something is going wrong. Repeatedly in the past two years predictions of lessened activity in this line or that have been proved wrong by the actual physical records. There has been really but slight increase in steel tonnage since 1923. There have been four years of activity. During this time the country has grown in efficiency and population. If that growth could be measured accurately it would in all probability be found to be greater than the increase in steel tonnage.

The steel market has changed altogether in that there is no relationship in buying activity among the different classes of buyers. Each class proceeds purely and precisely according to its circumstances. In the old days the entire steel market moved by swings. Nails and rails, bars and bolts, sheets and skelp, cars and cans, were all expected to move together, and generally they did.

There used to be talk about there being seasons in steel, but consideration showed that such seasons as there were came from habits of buyers rather than from physical conditions. Buying movements started at various times in the year.

The steel production statistics of recent years indicate clearly the existence of seasons, but as a new development. It is natural that there should be some seasonal influences in steel. Winter interrupts much work. Summer is a time of particularly active work and naturally requires preparation. The figures show a tendency for steel shipments to drop off late in the year, to be particularly heavy in early spring, and to have some

lull at mid-summer. The changes from month to month are not great, and the greater increase in per capita consumption of steel in the South than elsewhere tends to reduce gradually this influence. When this seasonal influence is better understood there will be less mistaking of a little swing for the beginning of a big swing.

The relative value of steel orders of different size has greatly changed. The time was that the total tonnage in a year of a given customer was the chief consideration in the price treatment. Service has become important, and the larger the order the more important is service. The seller is furnishing something which he has made much progress in convincing the buyer is of value. The small orders do their own averaging.

Competitive methods have changed radically. Price used to be the only argument. Now there are many ways of securing an order, and all the ways have not yet been thought up. Price is the last consideration, although steel sellers were never more alert in watching for divergences. Gradually there has been growing a feeling among buyers that price concessions are suspicious. Once they were considered so much net profit to the lucky buyer.

Passing on the Taxes

ONE of the arguments of representatives in Congress against the President's simple proposal for a rebate on income tax paid in 1926 is that such taxpayers have already passed their burden on to the public, where it would remain on the score that a rebate would be merely a bonus to the corporations and rich men.

T. O. Edwards, general auditor of the Southern Pacific Co., has just estimated that the taxes paid by the railroads this year will run to about 420 million dollars, an increase of about 10 per cent over 1925. Most of the railroad taxation is collected by the State governments. However, the principle is the same in that no part of any taxes paid by the railroads is passed on to the public, freight rates and passenger rates being substantially fixed by Congress itself. Likewise are the rates of all

other public service corporations fixed by law of one kind or another.

The net income of all other corporations and producers is determined in the first instance by the prices they can get for their products, and prices are determined by the law of supply and demand and by competition among producers. This does not permit any taxation to be passed on. If cost of production plus taxation exceeds revenue the producer is constrained to cease producing.

Similarly is the rental on real estate determined by the law of supply and demand. Out of the gross the landlord must pay taxes, insurance, and upkeep. He gets for himself only what remains.

Taxes on income are not passed on; but taxes on consumption are. Every theater ticket, for example, purchased for more than 75 cents shows on its face just how much is being passed on. All of our import duties are essentially taxed on consumption and in the main are passed on.

High Wages Do Not Make Prosperity

AN economic fallacy of the day is that high wages produce prosperity. Reduce the return on capital and increase the reward of labor and the latter will be able to buy more goods. If spare time does not permit the full enjoyment of such goods, reduce the working time from six days per week to five. Then there will be more automobiling, more theater-going, etc. Let European countries raise their wage rates to American levels, and presto! prosperity will begin among them.

This is thinking so topsy-turvy as to be humorous. If instead of high wages there were high dividends all the receipts would, of course, likewise be spent. There would be the same demand for goods and services, but it would be for different forms. There would be, for example, less silk bought and used, and more steel. Some of the existing use of steel would be switched from automobiles to structural shapes. Such a switch might affect the use of a collateral commodity, such as copper, whereof in automobile construction a great deal is required along with the steel, whereas in railroad building relatively little is needed. Individual industries are therefore swayed favorably or unfavorably, but the aggregate volume of business would not be altered.

High wages and low dividends mean simply a different division of the produce of industry. This does not necessarily signify an enduring advance in national prosperity. Indeed, it may mean just the opposite. The people who receive large income from dividends do not, and can not, consume all that they get; for they can not eat any more food or wear out any more clothing than anybody else. The superiority of the food, clothing, etc., that they enjoy is a relatively small matter. Their surplus of income goes into investments, i.e., into the creation of new capital goods. Reduction of such a surplus transfers more or less of the produce of industry to people who consume everything and have no surplus. But, either way, activity in business continues.

The factors that create hard times are things of nature, both physical and human. A crop failure.

A prolonged strike of labor, such as has been going on in Great Britain. Unwise legislation, producing economic restrictions. Inefficiency of labor and management. Miscalculations of management. Such are the things that cause depression, unemployment and all the other evils that are dreaded.

National prosperity like family prosperity is a function of production and thrift. Production is a function of labor, intelligently directed and efficiently performed. That is what makes for high wages, which are beneficent if accompanied by high dividends. High wages and low dividends do not constitute a sound condition. High wages do not make prosperity. High production makes prosperity and that makes high wages.

Steel Selling as a Forecaster

THERE is a vast difference between a slump in automobile production and in automobile production schedules. One is current and the other something yet to occur. Early October trade reports noted a recession in automobile production schedules and neither the production figures nor the experience of October in the matter of sales and specifications of steel disproved these observations.

For some time the automotive industry has figured 30 or 40 days' supply of steel sufficient for smooth and uninterrupted production. Usually it has had a supply "afloat" or in process of manufacture to cover such a period. A reference, therefore, early in October that there had been a decline in business did not necessarily mean that October production of motor vehicles would be down sharply, but rather pointed to a loss in November.

As a general rule, gains or losses in orders for steel from the motor car industry precede by about four to six weeks changes in the production of cars and trucks. Orders for cold-finished steel bars precede changes in motor-car production schedules by about four weeks, while cold-rolled strips and automobile body sheets, on account of the longer time required for their manufacture and fabrication, show the sales and production expectations about six weeks in advance of a change in car and truck production programs.

Why American Automobiles Lead

AN estimate is made in the current number of *Automotive Industries* that approximately 60 per cent of the motor vehicles in use outside the United States and Canada are of American origin. Considering the nature of automobiles, the need for servicing, the showing is remarkable.

It is admitted that the available data are not so complete as might be desired, and that a full count might show somewhat less than a 60 per cent proportion, but that is a detail, for anything approaching 60 per cent would be impressive.

Import statistics showing country of origin are available for the principal countries outside of France and Germany, while production figures are available for the United States and Canada, Great Britain, France, Germany, Italy and Belgium.

It will be recognized, of course, that while the 60 per cent proportion, or thereabouts, is large, the

number of motor vehicles abroad is small, judged by American standards. The National Automobile Chamber of Commerce year book gives the world's registration in 1925 at 24,564,574, of which the United States had 19,954,347, or 81 per cent.

No large proportion of the production of the United States and Canada had to be exported to make the showing. These exports amounted to 116,000 in 1922 and 386,000 in 1925, making an increase of 232 per cent in three years, but the 1925 exports were only 8.9 per cent of the production.

The reasons for American motor vehicles making the showing abroad that they do are of more general interest than the bare fact. A rare opportunity has been afforded for American genius and productiveness to function. There has been a very large home market, making quantity production feasible, and there has been an absence of interference by labor unions. This latter the American Federation of Labor, by resolution at its recent Detroit convention, proposes to alter. The comparison has often been made of the relative purchasing power of the dollar in 1913 and at the present time, when invested respectively in building construction or in an automobile. One gets much more for his money now than in 1913 in buying an automobile, and much less when indulging in building work. The difference is commonly and naturally ascribed largely to the difference in labor conditions in the building trades and in the automobile industry.

Generally speaking, we originated the airplane and did not by any means originate the automobile. We are lame in the former and strong in the latter. The difference seems to be due largely to the fact that aircraft work is supported by governments while automobiles are a matter of the people.

CORRESPONDENCE

MARVELS OF MUSSOLINISM

An Italo-American Machine Shop Manager Takes Issue with Mr. Calder

To the Editor: I have read the article "Autocracy Holds Italy's Industry" by John Calder, in your Oct. 7 issue, and I am writing this to correct a few statements made by the writer. Mr. Calder evidently went through Italy very much in a hurry and didn't have time to find out by himself and to his entire satisfaction conditions as they are.

I am an American citizen, have lived in the States for the past 20 years, and for the last four have spent ten months of each year in Italy managing a branch of an American machine shop in Naples. We have nearly 250 men employed, most of them machinists and helpers, the latter being young men graduates from a local industrial school.

My experience with these men has been on the whole very pleasant. As our work is of an exacting nature, we had a little difficulty in getting the proper elements at the beginning, but now that we have become better acquainted with our surroundings we have succeeded in selecting and keeping a fine body of men, very quiet, sober and above all, very intelligent.

A lot of rubbish has been printed about the inferiority complex of the southern Italians, but evi-

Boston and Chicago Swap Power

THE extraordinary progress which has been made in a relatively few years in so-called super-power transmission of electricity was demonstrated the other day in the first experimental interchange of current between the steam power stations of the coast cities of New England and the hydraulic stations of the New England Power Co. on the east, and stations of the Middle West, including Chicago and Waukegan. In the tie-in were not only power plants of the Atlantic seaboard and southern Lake Michigan, but also scores of plants of the intervening territory, in New York State, including those of the Adirondack watersheds and Niagara Falls, and in a long series of centers across Pennsylvania, Ohio and Indiana. Power generated by steam at Boston, Providence and Fall River and by water on the Deerfield and Connecticut rivers turned wheels and lighted lamps in Pittsburgh, Cleveland and Chicago. Similarly, power generated in the mid-western cities lighted buildings and operated machinery in New England. The connection was likened to a reservoir into which a great number of stations poured their power or drew from it, as they had power to spare or were in need of it.

The amount of power thus exchanged was not great. Nor was it a metallic connection all the way through. Lack of standardization of voltage and frequencies compelled the use of transformers and frequency changers. But it was demonstrated to the engineers in charge of the test, they state, what they had hoped to find, that interconnection on this immense geographical scale was wholly practicable. Giant power will one day find all political obstacles bowled over and commercial differences settled. Then will it be a commonplace, though now it seems so Utopian as to be difficult to establish.

dently the people who have been writing this, if they have visited the country, have not had time to scrape the surface and look a little deeper, or if they have reached their conclusions by reading our home paper stories of Black Hand and Mafia are utterly ignorant of the fine qualities of the great majority of the southern Italian immigrants.

A New Life for Italy

What a vast change in our help from the early part of 1922 to date! Fascism has been a wonderful tonic to all Italy. Mussolini's example, the long hours he works daily, the enthusiasm he puts into his work, his masterful way of reasoning, all have a vast echo all over Italy. The large cities in the north as well as the poorest sections of the south all seem to be permeated with a new life, and there is an undreamed of activity.

Mussolini has created and brought forward many wonderful men all over the country, and this I consider his greatest asset. He has brought to light many other Mussolinis, of smaller stature, but all eager and earnest to do their work well and have the people with whom they come in contact do the same.

It is a wholly spiritual movement that has carried and is carrying with it not only the unthinking youth, as Mr. Calder is pleased to call them, but mature men, old men and men of brains in all ranks and professions, so that one can easily say that any one in Italy with a sane heart and mind is fully in accord with the Duce's views and would do his utmost to follow in his footsteps, for he is a leader of the first magnitude and the most sincere patriot Italy has ever had.

While Mr. Calder's article was being printed the lira

was already feeling a little better; in a short while it has jumped from 32 to the dollar to 22 to the dollar, and should the Italian Government be able to keep the forces of speculation within limits the lira is bound to do better.

The Mussolini Regime for Industry

Now referring to the daring legislation for industry, beyond a doubt both employers and employees will benefit by it. It is no longer true that employers and employees have a right to make their own mistakes (as Mr. Calder puts it) when the welfare of the public at large is concerned.

Whenever both classes do not agree on some economic issue, it is only fair to both and to the nation that they get together like intelligent beings and reach an agreement.

The old regime under which the employer could fly at the employee's throat whenever he thought to have the upper hand, and vice versa, is a thing of the past. No nation can ever prosper with its citizens fighting one another. No strikes, no lockouts should be tolerated any longer. The world has no use for the violent or silver tongued union delegate that has done so much harm to industry.

Both employers and employees are factors in the economic welfare of the country and should not be allowed the right to make their own mistakes, as most mistakes can be avoided. The two classes must not clash and cannot be allowed to clash because they are so dependent on each other for the betterment of both.

Mussolini has brought about, with the establishing of the syndicates, a fine spirit of cooperation in industry. Sport activities among the laboring classes have increased ten-fold and you find night courses at the different schools filled with workmen and peasants eager to learn more.

Country Districts Changed as by Magic

Fascism is spreading the gospel of sane and good living even in the remotest country places which under past democratic government were absolutely ignored. In Basilicata and in Calabria, two of the most neglected provinces of the kingdom, there were no passable roads, no water works, no electricity, no water. All this is changing as if by magic.

Only a month ago I was invited by a friend of mine to spend a week end up in the mountains of Basilicata. What beautiful roads and how well kept they were—miles after miles. In a small village perched on the peak of a mountain with 3000 inhabitants they were stringing pipes for good fresh running water.

Schools of agriculture which were considered as seats of learning and from which little or no practical results were forthcoming have been awakened to usefulness; they have been multiplied, and you can now see teachers come in touring cars, stop at a public building or in a large farm house and give practical lessons to the farmers.

Country schools have been multiplied in a short time. Illiteracy, which was holding its own even in large cities like Naples, will shortly be a thing of the past.

Farmers will no longer use antiquated methods in the cultivation of their land. They have been compelled by law to take proper care of the manure and it will be an offense and punishable with fines not to have a manure pit regularly built in any farm where animals are kept. This was needed. The enormous waste resulting from poorly kept manure will be reduced and in time will disappear.

The institution of the "After Work," where employees receive useful knowledge and entertainment, was sorely needed and is a good thing for employers in any country to provide for their employees. The ninth hour is paid for by employers. It is, however, not considered as overtime, and therefore the workman does not get paid the 10 to 25 per cent extra for overtime, but is paid at the regular rate.

The cost of living was getting higher, but industry could pay no higher wages, for this in turn would

make the cost of living still higher, and the ones to suffer the most would have been the workmen themselves. Therefore the solution of the ninth hour was a happy one. The cost of living has not gone any higher, the men are satisfied and they are heart and soul in favor of the new order of things.

Vast Legislative Betterment

The eternal squabbles staged in the Chamber of Deputies are a thing of the past. Has this restricted the liberty of the people? Not in the least. If people are eager to talk, there is no reason why they should be kept in the Chamber of Deputies; there are so many other places to which these gentlemen can be sent.

To be the deputy of a province, to study conditions in that province and to be able to go into a fine assemblage of thinkers and studious people and set forth the needs of their constituents, is a wonderful thing, but no such a thing can ever be had through election by the people. In practice, deputies had become mere solicitors for corporations or individuals; they were business links between business and government and their work was not always clean. About 85 per cent of former deputies were lawyers.

The Chamber of Deputies did not work; the results of such legislators could not have produced anything else but chaos, and this was the condition Mussolini found when he started Fascism.

The same conditions prevailing in the Chamber of Deputies were also true in every town, in every village.

Political power was everything and people, instead of tending their business, would study and plot and use every means they could command to be made mayors, and there were feuds after feuds, with the result that enormous extravagance would follow, money was never spent wisely, the men chosen for mayors were in most cases not fit for the work, economic conditions would suffer and as a result many parts of southern Italy today are fifty years behind times.

The podestà will do away with all that. He is a man chosen by the central government to carry on a certain definite work. He has a program to develop, following lines which are given to him and which being viewed by Rome, studied and coordinated with the interest of the other towns and of the nation, cannot conflict with the interests of neighboring villages or towns.

Public works are not now carried on with the idea that politicians must be satisfied. There is a technical man at the head of a bureau in each province who sees, studies, reports the conditions prevailing in his zone, and then executes the work assigned. While the podestà is the town chief and administrator, he has nothing to do with spending of the money for public works. The institution of the podestà is the same as the city manager plan adopted in America, only the work is more coordinated and gives better results.

The city of Naples, before the present government, was blessed with a city administration consisting of a mayor and of something like sixty assemblymen. It had a yearly deficit running into millions; they were spending money recklessly, unwisely and at times dishonestly; as a result there was almost anarchy as far as public administration was concerned; everything was going to the weeds.

Mussolini saw this (by the way, he seems to have time to see everything), sent the mayor and the assemblymen home and appointed a man who is responsible to him personally for the management of the town.

Things are now done intelligently, and it is a pleasure even for the taxpayer to pay his taxes, knowing that a good percentage of that money comes back into service.

MARIO CARUSO.

Naples, Nov. 7.

[Mr. Caruso is manager at Naples of the plant of Societa Meccanica La Precisa, and the connected American company to which he refers is the Lionel Corporation, manufacturer of electrical toys, Irvington, N. J. The article by Mr. Calder, written for THE IRON AGE in connection with his visit to Italy as a member of

the American Management Mission, was quite appreciative of some features of Mussolinism, but questioned the outcome of such a regime of autocracy as applied to industry.—EDITOR.]

American Mining Congress

While the program for the twenty-ninth annual convention of the American Mining Congress is not complete, the main topics have been definitely decided upon. The five principal subjects are: Stabilizing mineral production, politics and natural resources, mine taxation, unified labor program, and elimination of high costs through simplified methods and equipment. The convention will occupy quarters in the Mayflower Hotel, Washington, Dec. 7 to 10 inclusive.

Under the "state of the industry" in the session of Dec. 7 will be reviews of coal, lead, zinc, silver, iron (by a representative of the Lake Superior Iron Ore Association) and non-metallic minerals. The labor session of Dec. 8 will include an address on "Labor Relations in Metal Mining," by Cleveland Dodge of the Phelps-Dodge Corporation. Stabilizing mineral production in the afternoon of Dec. 8 will include papers on "A Stabilized Mineral Industry," by Robert E. Tally of the United Verde Copper Co.; "Reducing Operating Costs Through Mechanical Avenues," by Eugene McAuliffe of the Union Pacific Coal Co., and "Promoting an Expanding Future for Copper," by William A. Willis, manager of the Copper and Brass Research Association.

Taxation will occupy the entire day Dec. 9. Among the several papers is one on "Discrimination Against Corporations Under Present Income Tax Rates," by H. B. Fernald, member of the General Tax Committee of the American Mining Congress. Elimination of waste through standardization will occupy the convention on Dec. 10, a number of reports being presented, as well as several papers.

Comprehensive Program Planned for Taylor Society Meeting

With ten sessions, 15 papers, two symposiums, and a large number of formal discussions, the meeting of the Taylor Society at the Engineering Societies Building, New York, Dec. 8-11, will comprise a comprehensive program.

Three of the sessions, on Thursday, Dec. 9, will be held jointly with the management division of the American Society of Mechanical Engineers. An international evening, Dec. 9, will be held jointly with the A. S. M. E., the Society of Industrial Engineers, American Management Association and the Committee on American Participation in International Management Congresses. Morris L. Cooke, consulting engineer, Philadelphia, and president-elect of the Taylor Society, will preside and a number of foreign guests will take part in discussion of the topic, "International Cooperation in the Development of a Science of Management."

"Laws of Manufacturing Management," by L. P. Alford, vice-president of the Ronald Press Co., New York; "Production Control," by C. G. Stoll, vice-president of the Western Electric Co., Chicago, and "Progress in Management Engineering," a report of the management division of the A. S. M. E., are papers planned for the morning session Dec. 9. The papers at the afternoon session include: "Railroad Organization," by J. C. Clark, Industrial Relations Counselors, Inc., New York; "Vitalizing vs. Centralizing Organizations," by R. E. Newcomb, superintendent of the Deane works of the Worthington Pump & Machinery Corporation, Holyoke, Mass., and "An Experiment in Scientific Management in the Coal-Mine Industry," by J. C. White, editorial staff, *Coal Age*, New York.

The opening session of the Taylor Society meeting, Dec. 8, will be devoted to discussion of management education problems. At a session on methods and instruments of research, to be held Friday morning, Dec. 10, Dr. H. S. Person, managing director of the Taylor

Society, will present a paper on "Management's Concern in Methods of Research." R. L. Tweedy, secretary of the Massachusetts Manufacturers Research Association, Boston, will outline the work of the association, and more than eight formal discussions are planned for this session, the chairman of which will be E. E. Lincoln, Western Electric Co., New York.

"Overhead Costs and Managerial Policy," by J. M. Clark, Columbia University, New York, is one of the papers planned for the afternoon session, Friday, Dec. 10. Current or "hand-to-mouth" buying will be discussed at the evening session, at which W. O. Jelleme, comptroller of the Cohn-Hall-Marx Co., New York, will present a paper on "The Influence of the Current Buying Habit on Managerial Policy and Practices."

Empire Mining and Metallurgical Congress Plans 1927 Meeting in Canada

Canada has been selected as the meeting place of the second Empire Mining and Metallurgical Congress, which will be held in 1927. The congress, which is held triennially, attracts engineers and metallurgists from all the British dominions. Charles Stewart, Canadian Minister of Mines, is cooperating with the main committee of the congress in making plans for the meeting, and tours of the more important mining and smelting districts of Canada will be included.

To Extend Railroad in Panama

A single-track railroad, 51 km. (31.7 miles) long, from Concepcion to Puerto Armuelles, will be built by the Government of Panama as an extension of the Chiriqui National Railroad to develop more of the coffee country in Chiriqui Province. The Government has awarded a contract to F. H. Arosemena, a citizen of Panama, to build a road and a 1300-ft. reinforced concrete pier at the new deep water harbor at Puerto Armuelles. Approximately \$3,000,000 will be expended on these improvements. Mr. Arosemena has contracted with the J. G. White Engineering Corporation, New York, to act as his engineer for the design of the wharf and to carry out the construction of both the wharf and the railroad. There will be 45 structural steel and 13 girder bridges along the line.

H. Q. Kennedy, chief construction supervisor for the White corporation, has returned from a two months' visit in Panama, where he made an inspection of the location for the proposed work in company with engineers and representatives of the Government and of Mr. Arosemena. Locomotives and rolling stock will be required.

Western Electric to Enlarge Hawthorne Works

Contracts have been let for alterations and additions to the Hawthorne Works, Western Electric Co., Chicago, which will increase the toll cable capacity of the plant approximately 70 per cent. The project covers the remodeling and reconstructing of 16 buildings, having a total floor space of 350,000 sq. ft., and will be so handled that output will not be impaired during its progress. The work includes the shifting and moving about into new locations of all existing plumbing, heating, lighting, sprinklers, gas and air service lines, the rebuilding of steel work, relocation of brick walls and the building of new roofs.

The alterations were made necessary by the large toll cable schedules recently placed by the American Telephone & Telegraph Co., and 18 to 24 months will be required to complete the operation. The contract for the work has been let to the Turner Construction Co., and will be under the general direction of John P. H. Perry, resident vice-president at Chicago, and Joseph C. Grady, Chicago operating manager, who will be in direct charge.

Small Gain in November Iron Output

Estimated Returns, Collected by Wire, Show Daily Rate
Increased 330 Tons Over October—Net
Loss of 2 Furnaces

DATA collected by wire on Nov. 30 from companies which estimated the pig iron production for the last two days of the month show that there was a small increase for November over October. The daily rate for November was 107,883 tons as contrasted with 107,553 tons per day in October. This is a gain of 330 tons per day for November. The estimated daily rate for last month is the largest since May of this year. The total estimated production for November is 3,236,500 gross tons; the October actual output was 3,334,132 tons.

There were 7 furnaces blown in and 9 blown out or banked, a net loss of 2 for the month. In October there was a net gain of 4 furnaces. There were 217 furnaces active on Nov. 30 as compared with 219 on Nov. 1.

One new furnace blew in during November, the new stack of the Weirton Steel Co. at Weirton, W. Va., just recently completed.

Furnaces Blown In and Out

Among the furnaces blown in during November were the Standish furnace in New York; one furnace of the Bethlehem Steel Corporation in the Lehigh Valley; one Carrie furnace of the Carnegie Steel Co. and the Clinton furnace in the Pittsburgh district; one furnace at the Maryland plant of the Bethlehem Steel Corporation in Maryland; the new furnace of the Weirton Steel Co. in the Wheeling district and one furnace of the Sloss-Sheffield Steel & Iron Co. in Alabama.

Among the furnaces blown out or banked during November were one Duquesne furnace of the Carnegie Steel Co. in the Pittsburgh district; the Claire furnace in the Shenango Valley; the Punxy furnace in Western

Pennsylvania; one Ohio furnace of the Carnegie Steel Co. in the Mahoning Valley; two South Chicago furnaces of the Illinois Steel Co. in the Chicago district; the Thomas furnace in Wisconsin; one furnace of the Sloss-Sheffield Steel & Iron Co. and one furnace of the Tennessee Coal, Iron & Railroad Co. in Alabama.

Production by Districts

The estimated November production by districts is given in the table. The complete returns, giving the actual output for November, will be published in THE IRON AGE, Dec. 9.

Pig Iron Production by Districts, Gross Tons

	Nov. (30 days)	Oct. (31 days)	Sept. (30 days)	Aug. (31 days)
New York and Mass.	218,934	224,631	211,362	196,706
Lehigh Valley.....	98,363	89,804	77,523	80,506
Schuylkill Valley...	63,813	69,221	65,101	67,550
Lower Susq. and Lebanon Valleys..	47,412	36,639	35,545	35,167
Pittsburgh district..	683,208	728,650	688,000	668,100
Shenango Valley...	93,229	109,450	96,841	108,719
Western Penna.....	119,061	134,104	130,219	127,514
Maryland, Virginia and Kentucky....	89,250	90,117	84,172	85,171
Wheeling district...	110,467	109,241	105,391	108,429
Mahoning Valley...	316,798	342,437	329,488	323,305
Central and North- ern Ohio.....	347,665	345,124	333,951	351,852
Southern Ohio.....	49,835	43,843	38,082	36,071
Illinois and Indiana	568,099	602,672	576,506	644,907
Mich., Minn., Mo., Wis., Colo. and Utah	150,388	152,615	127,860	121,357
Alabama	273,142	249,584	230,345	238,812
Tennessee	6,536	6,000	5,907	6,313
Total	3,236,500	3,334,132	3,136,293	3,200,479

Suspends Pig Iron Tariffs in C. F. A. Territory

WASHINGTON, Nov. 30.—The Interstate Commerce Commission today entered an order suspending from Dec. 1 to March 31 tariff schedules of the Pennsylvania Railroad that both increase and reduce rates on pig iron in Central Freight Association territory. Recently the other schedules proposing changes in pig iron tariffs in this territory were suspended. A hearing on the schedules suspended today has been set for Dec. 13 at Chicago before Examiner Walsh.

The Fretz-Moon Tube Co., Butler, Pa., recently completed an extensive addition to its plant and has installed equipment for the manufacture of rigid conduit, elbows and couplings, both galvanized and black enameled. Depending on the finish, these lines will be sold under the trade names of "Galvite" and "Enamelite." The company also announces the appointment of Harry S. White as sales manager.

The Building Construction Employees Association and the Building Trade Council, of Chicago, have entered into a closed shop agreement which will be in effect for a period of three years. This agreement, which expires June 1, 1929, virtually returns all open shop building trades with the exception of the carpenters to their former closed shop status.

Ryerson Buys Bourne-Fuller Warehouse Business

The Bourne-Fuller Co., Cleveland, has sold its steel warehouse business, warehouse property and stock in Cleveland to Joseph T. Ryerson & Son, Inc., Chicago. The Bourne-Fuller Co. will retain its plain and fabricated reinforcing bar and tool steel departments, which will be removed to another location. With the sale of its steel jobbing business, the Bourne-Fuller Co. will confine its operations to the manufacture of alloy and carbon steels, bolts, nuts and rivets and other finished steel products and semi-finished steel. The Ryerson company specializes in warehouse service in steel products and has a chain of eight plants located at leading industrial centers.

New Ingot Mold Foundry at Sharpsville

The Shenango Furnace Co., Pittsburgh, is actively going ahead with the construction of a new ingot mold foundry, which it expects to have completed and in operation about April 1 next year. The new plant, which involves an expenditure of more than \$1,000,000, is located on the company's furnace property at Sharpsville, Pa. There will be only a yard switching of the molten pig iron from the company's blast furnaces to the new foundry. It is designed for a production of 30,000 tons of molds a month, and by virtue of ownership of mines in the Northwest the company can boast of controlling production from the ore to the finished mold.

Iron and Steel Markets

Operations Continue to Recede

Consumers Have Covered Needs Well Into Next Year—Upturn
Expected Within 60 Days—Slight Increase in
November Pig Iron Output

FURTHER curtailment in steel operations has brought the industry to a level under rather than over 70 per cent of capacity. The Steel Corporation itself is close to a 73 per cent basis. Signs now are that the recession will continue into January, with estimates of a 60 per cent rate before an upward turn will occur.

A fairly free flow of specifications featured the last days of November, and consumers appear now to be definitely covered for needs through January. Current new bookings meanwhile are small. In the light of likely subnormal stocks in buyers' hands at the year end, and the virtual absence of forward buying, producers regard the upturn as merely postponed. Consumers view the conditions as safely allowing time to appraise their own position.

November pig iron output, measured in terms of the daily output, showed a slight increase over October. Telegraphic returns gave a production of 3,236,500 gross tons for the 30 days of November, or 107,883 tons per day, as against 3,334,132 tons for October, or 107,553 tons per day, an increase of 330 tons per day.

On Dec. 1 active blast furnaces numbered 217, out of a total of 372, while 219 were in blast on Nov. 1. Seven blew in and nine blew out in the month (with two Cleveland stacks scheduled for banking this week). Production on Dec. 1 is at about the January rate of 107,000 tons per day.

Additional releases of suspended shipments were received from the automobile trade. These have covered pig iron as well as sheets, cold-rolled strips and cold-finished bars. One order was for 2500 tons of auto-body sheets, for December-January delivery.

Sheet prices continue irregular. Some first-quarter sales have been made at the current quotations of 3c., Pittsburgh, for black sheets, and 2.30c. for the blue annealed, which is \$2 a ton below the level set some weeks ago for that period. The smaller makers, without sizable backlogs, are making concessions for prompt shipment business. The Pittsburgh prices, for example, have been named as base for Valley mills.

Wider adoption is now indicated of the new plan of basing the price of cold-rolled strips on the small lot order, applying reductions from this in steps on larger orders. It has not as yet strengthened prices, which are not uncommon at 3c., Cleveland.

Activity of tin plate mills is notable, with next season's needs as yet unestimated and in addition rendered uncertain in respect to what will be the Welsh participation in Canadian business next year.

Contrasted with the quietness in butt welded pipe is a purchase from the National Tube Co. of between 50,000 and 60,000 tons for a 10-in. line from the Texas Panhandle to the Gulf. An 18-in. gas line in the Southwest under negotiation will take 1300 tons.

Two Western railroads bought 12,000 tons of rails, and in the Chicago market 50,000 tons of accessories are pending. Rail mill operations approach 80 per cent of capacity, and production is heavier at this season than in a number of years.

Another good week in fabricated steel proposals adds 50,000 tons in new projects. A bank and office building in Chicago will take 12,000 tons, and 10,000 tons for bridge work is required for an 85-mile railroad line planned by the Chesapeake & Ohio.

Two more Lake boats have been put under inquiry, taking over 5000 tons of steel.

Pig iron, following the recent buying for first quarter, is inactive. A decline of 25c. to 35c. per ton in furnace coke, resulting from converting an increasing quantity of unmarketed coal, encourages a waiting attitude among pig iron consumers, though merchant furnaces that would be affected directly, as in the Valley district, are not making foundry iron. Foundry and malleable irons for the local Cleveland market are off 50c. a ton.

The Imperial Government Railways in Japan are accepting bids until Dec. 10 on about 7800 tons of 100-lb. rails and splice bars.

British blast furnaces hope to resume by the end of the year. No general resumption in steel is expected before mid-January. Plate mills have four to five months' backlog, following a marked increase in shipyard orders. British receipts of Continental steel are checked by congestion at shipping ports.

Exports of iron and steel products in October, at 172,070 tons, fell 10,000 tons below the September total and represented the smallest outgoing tonnage since June. For the ten months, however, an advance of nearly 21 per cent was made over last year, the current figure of 1,749,029 tons being 300,000 tons ahead of 1925.

Imports of iron and steel in October amounted to 81,830 tons—the lowest figure since January.

No change has occurred this week in the components of THE IRON AGE composite prices, that for pig iron remaining for the third week at \$20.13 per ton, while finished steel, for the eighth week, stands at 2.453c. per lb. Pig iron is \$1.66 below its level as of Jan. 1, while finished steel is at exactly the Jan. 1 price.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 30, 1926	Nov. 23, 1926	Nov. 1, 1926	Dec. 1, 1925
No. 2 fdy., Philadelphia...	\$23.26	\$23.26	\$22.26	\$23.76
No. 2, Valley furnace....	19.00	19.00	19.00	20.50
No. 2, Southern, Cin'ti....	23.69	23.69	23.69	24.69
No. 2, Birmingham.....	20.00	20.00	20.00	22.00
No. 2 foundry, Chicago*	21.00	21.00	21.00	23.00
Basic, del'd eastern Pa....	22.50	23.00	21.50	23.00
Basic, Valley furnace....	18.50	18.50	18.50	20.00
Valley Bessemer, del'd P'gh	21.76	21.76	21.26	22.76
Malleable, Chicago*	21.00	21.00	21.00	23.00
Malleable, Valley	19.00	19.00	19.00	20.50
Gray forge, Pittsburgh...	20.26	20.26	20.26	21.76
L. S. charcoal, Chicago...	27.04	27.04	27.04	29.04
Ferromanganese, furnace...	100.00	100.00	88.00	115.00

Rails, Billets, etc., Per Gross Ton:

O.-h. rails, heavy, at mill...	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	36.00	36.00	36.00	36.96
Bess. billets, Pittsburgh...	35.00	35.00	35.00	35.00
O.-h. billets, Pittsburgh...	35.00	35.00	35.00	35.00
O.-h. sheet bars, P'gh....	36.00	36.00	36.00	36.00
Forging billets, P'gh....	40.00	40.00	40.00	40.00
O.-h. billets, Phila.....	40.30	40.30	40.30	40.30
Wire rods, Pittsburgh....	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.90	1.90	1.90	1.90

Finished Iron and Steel,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia...	2.22	2.22	2.22	2.22
Iron bars, Chicago.....	2.00	2.00	2.00	2.00
Steel bars, Pittsburgh...	2.00	2.00	2.00	2.00
Steel bars, Chicago.....	2.10	2.10	2.10	2.10
Steel bars, New York....	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh...	1.90	1.90	1.90	1.90
Tank plates, Chicago....	2.10	2.10	2.10	2.10
Tank plates, New York...	2.24	2.24	2.24	1.94
Beams, Pittsburgh.....	2.00	2.00	2.00	1.90
Beams, Chicago	2.10	2.10	2.10	2.10
Beams, New York.....	2.34	2.34	2.34	2.24
Steel hoops, Pittsburgh...	2.50	2.50	2.50	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire,	Nov. 30, 1926	Nov. 23, 1926	Nov. 1, 1926	Dec. 1, 1925
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 24, P'gh	3.00	3.00	3.00	3.10
Sheets, black, No. 24, Chi-				
cago dist. mill.....	3.20	3.20	3.20	3.30
Sheets, galv., No. 24, P'gh	3.85	3.85	3.85	4.15
Sheets, galv., No. 24, Chi-				
cago dist. mill.....	4.05	4.05	4.05	4.25
Sheets, blue, 9 & 10, P'gh	2.30	2.30	2.30	2.50
Sheets, blue, 9 & 10, Chi-				
cago dist. mill.....	2.50	2.50	2.50	2.60
Wire nails, Pittsburgh...	2.65	2.65	2.65	2.65
Wire nails, Chicago dist.				
mill	2.70	2.70	2.70	2.70
Plain wire, Pittsburgh...	2.50	2.50	2.50	2.50
Plain wire, Chicago dist.				
mill	2.55	2.55	2.55	2.55
Barbed wire, galv., P'gh..	3.35	3.35	3.35	3.35
Barbed wire, galv., Chi-				
cago dist. mill.....	3.40	3.40	3.40	3.40
Tin plate, 100 lb. box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:

Carwheels, Chicago	\$14.50	\$14.50	\$14.50	\$18.50
Carwheels, Philadelphia...	16.50	16.50	17.00	18.50
Heavy melting steel, P'gh	17.00	17.00	17.50	19.50
Heavy melting steel, Phila.	15.50	15.50	15.50	17.50
Heavy melting steel, Ch'go	13.00	13.00	13.00	15.75
No. 1 cast, Pittsburgh....	16.00	16.00	16.50	18.00
No. 1 cast, Philadelphia...	17.00	17.00	17.50	18.00
No. 1 cast, Ch'go (net ton)	16.00	16.00	16.00	18.00
No. 1 RR. wrot., Phila....	17.00	17.00	17.00	18.50
No. 1 RR. wrot. Ch'go (net)	12.50	12.50	12.50	15.00

Coke, Connellsville, Per Net Ton at Oven:

Furnace coke, prompt....	\$3.90	\$4.25	\$5.00	\$3.85
Foundry coke, prompt....	5.00	5.00	6.00	5.25

Metals,

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York...	13.75	13.87 1/2	14.12 1/2	14.37 1/2
Electrolytic copper, refinery	13.37 1/2	13.50	13.75	14.00
Zinc, St. Louis.....	7.55	7.52 1/2	7.25	8.70
Zinc, New York.....	7.50	7.52 1/2	7.60	9.05
Lead, St. Louis.....	7.80	7.80	7.80	8.25
Lead, New York.....	8.00	8.00	8.10	9.50
Tin (Straits), New York...	71.75	72.50	67.50	63.75
Antimony (Asiatic), N. Y.	14.00	14.00	13.25	20.00

Pittsburgh

Steel Output Continues to Decline—Large Pipe Order—Coke Lower

PITTSBURGH, Nov. 30.—The past week's business has been somewhat better with almost all manufacturers and in almost all products than the week before, but the gain appears to be due to the fact that consumers had been going to extremes in the matter of inventory paring rather than to real changes in the rate of activity of consuming industries. Specifications against old orders and releases of tonnage against which shipments had been suspended explain the increase in business, as new buying has not increased appreciably and consumer interest in first quarter supplies is still low.

Moreover, the tendency of plant operations to recede continues. The Carnegie Steel Co. has taken off a blast furnace at its Youngstown works in the last week, and two independent steel company stacks there will stop making iron by the end of the week. Ingot output in that district is below 70 per cent of capacity, and with slight losses in Pittsburgh, the average of the general Pittsburgh area is not now above 70 per cent. There is a feeling, however, that at that rate of output there is a close balance between production and consumption, and that business cannot get much poorer than it has been over the past 30 days.

The automotive industry has been releasing suspended shipments of sheets, strip and cold-finished steel bars, and this is taken to mean that the inven-

tories taken over the past month have been favorable and also that January will see heavier output of motor cars. The promise of greater buying by the railroads is regarded as fairly bright, and if lettings of structural steel are moderate, the prospect has been improved by a material increase in inquiries. One pipe order calling for between 50,000 and 60,000 tons of steel has come out in the past week, and with the possibility of others of size, it is beginning to look as though the pipe mills would have something to work on this winter, notwithstanding the slack business which lately has been developing in other kinds of pipe.

Large consumers of coal, regarding maintenance of present wage scales and consequently of present coal prices as uncertain, are withholding purchases, and the smaller producers, most of whom are without regular consuming connections, are finding it impossible to hold to their prices or to the advanced wage scales. A number of notices have been posted putting wages back to the November, 1917, scale, which roughly is one-third less than that called for in the so-called Jacksonville agreement. Coke is affected by the coal market, as inability to market coal has made it necessary for a number of producers to convert it into coke. The market in the latter is no broader than that in coal, and in the past few days \$4 has become the top on furnace fuel, while \$3.90 appeared today. These developments render more difficult the efforts of pig iron producers to interest consumers in supplies at the prices now asked.

Pig Iron.—A quieter market than exists in pig iron is hard to imagine. Consumers generally have some iron on their yards or under contract and have assumed

a waiting attitude with regard to their requirements in the first quarter of next year. It all goes back to coke prices, upon which the most recent advance in pig iron was based. With spot furnace coke selling at \$3.90 to \$4 and with some producers cutting wages to where they were prior to Nov. 1, pig iron consumers figure that it will be only a matter of a short time before there will be a general wage reduction at the mines and ovens and that this must necessarily bring about lower pig iron. Little attention, however, is paid to the fact that production of foundry iron, which actually constitutes what is left of the merchant iron market, is now very light and that there is not a Valley furnace at present producing any of that grade. Producers assert that costs justify present asking prices and, pending relief in that direction, are not disposed to seek business actively. Sales still run to small lots and at the same prices that have lately been ruling. The furnace of the Clinton Iron & Steel Co., Pittsburgh, which was banked about two months ago, resumed production Nov. 29. The furnace of the Stewart Furnace Co., Sharon, Pa., scheduled to start for some time, is still idle.

We quote Valley furnace, the freight for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic	\$18.50 to \$19.00
Bessemer	20.00 to 20.50
Gray forge	18.50 to 19.50
No. 2 foundry	19.00 to 20.00
No. 3 foundry	18.50 to 19.50
Malleable	19.00 to 20.00
Low phosphorus, copper free....	28.00

Ferroalloys.—Consumers continue to show only passive interest in 1927 supplies of ferromanganese and to date little or no contracting has been done. That is not surprising in view of the guarantee against a decline in price that is part of the quotation of \$100, Atlantic seaboard, either for domestic or foreign material, and the willingness of domestic producers to extend into the first quarter of next year the delivery of material unspecified against 1926 contracts carrying a price of \$88. The opening of books for 1927 business in 50 per cent ferrosilicon has not been followed by a rush to cover, and development of new business in spiegeleisen awaits an announcement as to prices, which has been delayed until the early 1927 market on coke becomes clearly defined. Prices are given on page 1583.

Semi-Finished Steel.—Non-integrated steel manufacturers are specifying against orders for billets, slabs and sheet bars strictly in accordance with their rolling schedules, which are not much above 50 per cent of capacity with strip makers and almost as low with several of the sheet mills that do not make their own steel. There is also a tendency to defer first quarter contracts until it is seen what December will show in the way of early 1927 business in finished products. Mill quotations are still \$35, Pittsburgh or Youngstown, for large billets and slabs, and \$36 for sheet bars, and small billets and slabs, but there are cases of preferential prices and special arrangements that bring about a somewhat lower average. Wire rods are steady at \$45, base Pittsburgh, and pipe skelp is holding at recent prices, with little open market activity in either product.

Steel and Iron Bars.—Current demands are moderate, and as yet little interest has developed in first quarter tonnages. Makers of cold-finished steel bars have had a few releases against suspended shipments from automobile parts makers, but no new demand of consequence has developed nor is it expected until the latter part of December. There has been no increase worthy of note in orders for hot-rolled bars from that direction, and demands from bolt, nut and rivet-makers are seasonally small. But there seems to be no undue pressure to sell, and 2c., base Pittsburgh, continues the ruling price, as it has been on new business since July 1. It is, however, an exceptionally unattractive order that will bring 2.10c., base. Tonnage buyers do not appear to have been obliged to pay more than 1.90c., base, on the bulk of the tonnage received in this quarter. Iron bars are dull, with prices barely steady.

Structural Steel.—Awards to local fabricating shops are small in the aggregate, and not much new business is developing in this immediate district. It is necessary for local fabricators to go far afield in search of business, and the common report is that price competition is keen. This was to be expected in view of the fact that structural steel bookings in October were equal to only 67 per cent of the country's capacity and that November saw shipments in excess of incoming business. The mills are firm at 2c., base Pittsburgh, for large structural shapes, except on projects of such a size as to get special consideration.

Plates.—The market is firm at 1.90c., base Pittsburgh, because productive capacity that can be operated profitably at that price is little, if any, in excess of the demands coming from barge and tank builders and for large outside-diameter pipe. A pipe line project to carry oil from the Texas Panhandle to the Gulf ports, calls for between 500 and 600 miles of 10-in. pipe, which means 50,000 to 60,000 tons, on a basis of 100 tons to the mile.

Wire Products.—The past week has brought some increase in orders, but no special significance is attached to the gain other than that actual consumption made it necessary for jobbers to order a little more freely. There has been no increase in mill schedules, as mill stocks are large. Prices are holding well.

Rails and Track Supplies.—Order books of the Carnegie Steel Co. have been swelled by a recent distribution of standard-section rails by the Baltimore & Ohio Railroad. Light-section rails are again dull, because of less promising prospects for sustained operation of the coal mines. Spikes, tie plates and other track supplies are not active, but improvement is expected as the rail-laying period approaches. Prices are given on page 1581.

Tubular Goods.—Interest again centers in pipe lines. An oil line to run from the Texas Panhandle to the Gulf, sponsored jointly by the Humble Oil Co., the Gulf Refining Co. and the Magnolia Petroleum Co., calls for between 500 and 600 miles of 10-in. plain-end pipe, the order for which has been placed with the leading interest. There is renewed talk of a gas line to run from Amarillo, Tex., to Denver, for which 450 miles of 20-in. pipe would be required, not including distribut-

THE IRON AGE Composite Prices

Finished Steel Nov. 30, 1926, 2.453c. Per Lb.

One week ago.....	2.453c.
One month ago.....	2.453c.
One year ago.....	2.439c.
10-year pre-war average.....	1.689c.

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low
1926	2.453c., Jan. 5;	2.403c.,	May 18
1925	2.560c., Jan. 6;	2.396c.,	Aug. 18
1924	2.789c., Jan. 15;	2.460c.,	Oct. 14
1923	2.824c., April 24;	2.446c.,	Jan. 2

Pig Iron Nov. 30, 1926, \$20.13 Per Gross Ton

One week ago.....	\$20.13
One month ago.....	20.04
One year ago.....	21.63
10-year pre-war average.....	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low
1926	\$21.54, Jan. 5;	\$19.46,	July 13
1925	22.50, Jan. 13;	18.96,	July 7
1924	22.88, Feb. 26;	19.21,	Nov. 3
1923	30.86, March 20;	20.77,	Nov. 20

Mill Prices of Finished Iron and Steel Products

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
F.o.b. Chicago.....	2.10c.
Del'd Philadelphia.....	2.32c.
Del'd New York.....	2.34c.
Del'd Cleveland.....	2.19c.
F.o.b. Cleveland, sizes up to 1-in. rounds.....	2.00c.
F.o.b. Birmingham.....	2.15c. to 2.25c.
C.i.f. Pacific ports.....	2.35c.
F.o.b. San Francisco mills.....	2.35c. to 2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills.....	2.00c. to 2.10c.
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Rail Steel

F.o.b. mill.....	1.80c. to 1.90c.
F.o.b. Chicago.....	1.90c. to 2.00c.

Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	3.00c.
Common iron, del'd Philadelphia.....	2.22c.
Common iron, del'd New York.....	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill.....	1.90c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.05c. to 2.15c.
Del'd Cleveland.....	2.09c.
Del'd Philadelphia.....	2.22c.
Del'd New York.....	2.24c.
C.i.f. Pacific ports.....	2.30c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill.....	2.00c. to 2.10c.
F.o.b. Chicago.....	2.10c.
F.o.b. Birmingham.....	2.15c. to 2.25c.
Del'd Cleveland.....	2.19c.
Del'd Philadelphia.....	2.22c. to 2.32c.
Del'd New York.....	2.34c.
C.i.f. Pacific ports.....	2.35c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh.....	2.50c.
All gages, 6 in. and wider, P'gh.....	2.30c.
All gages, 6 in. and narrower, Chicago.....	2.50c. to 2.60c.
All gages, wider than 6 in., Chicago.....	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. Pittsburgh mills.....	2.30c. to 2.40c.
Bars, f.o.b. Chicago.....	2.40c.
Bars, Cleveland.....	2.45c.
Shafting, ground, f.o.b. mill.....	2.55c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	3.25c. to 3.50c.
Strips, f.o.b. Cleveland mills.....	3.00c. to 3.40c.
Strips, delivered Chicago.....	3.40c. to 3.70c.
Strips, f.o.b. Worcester mills.....	3.75c.

*According to size.

Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails.....	\$2.65
Galv'd nails, 1-in. and longer.....	4.65
Galv'd nails, shorter than 1-in.....	4.90
Galvanized staples.....	3.85
Polished staples.....	3.10
Cement coated nails.....	2.65

	Base Per 100 Lb.
Bright plain wire, No. 9 gage.....	\$2.50
Annealed fence wire.....	2.65
Spring wire.....	3.50
Galv'd wire, No. 9.....	3.10
Barbed wire, galv'd.....	3.25
Barbed wire, painted.....	3.10

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$3 a ton higher; Anderson, Ind., \$1 higher.

Woven Wire Fence

	Base to Retailers Per Net Ton
F.o.b. Pittsburgh.....	\$65.00
F.o.b. Cleveland.....	65.00
F.o.b. Anderson, Ind.....	66.00
F.o.b. Chicago district mills.....	67.00
F.o.b. Duluth.....	68.00
F.o.b. Birmingham.....	68.00

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh.....	2.30c. to 2.40c.
Nos. 9 and 10, f.o.b. Ch'go dist. mill.....	2.50c.
Nos. 9 and 10, del'd Philadelphia.....	2.62c. to 2.72c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.60c. to 2.70c.

Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	2.90c. to 3.10c.
No. 24, f.o.b. Ch'go dist. mill.....	3.20c.
No. 24, del'd Philadelphia.....	3.32c. to 3.42c.
No. 24, f.o.b. Birmingham.....	3.30c. to 3.40c.

Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade.....	4.25c.
No. 24, f.o.b. Pittsburgh, B grade.....	4.10c.

Galvanized

No. 24, f.o.b. Pittsburgh.....	3.85c. to 3.95c.
No. 24, f.o.b. Chicago dist. mill.....	4.05c.
No. 24, del'd Philadelphia.....	4.17c. to 4.32c.
No. 24, f.o.b. Birmingham.....	4.20c. to 4.30c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.15c. to 3.25c.
No. 28, f.o.b. Chicago dist. mill.....	3.25c. to 3.35c.

Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.25c.
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Long Ternes

No. 24, 8-lb. coating, f.o.b. mill.....	4.30c.
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Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.....	6.60

Terne Plate

(F.o.b. Morgantown or Pittsburgh)
(Per package, 20 x 28 in.)

5-lb. coating, 100 lb. base.....	\$11.40
8-lb. coating I.C. 11.70	
15-lb. coating I.C. 14.85	
20-lb. coating I.C. \$16.20	
25-lb. coating I.C. 17.90	
30-lb. coating I.C. 19.45	
40-lb. coating I.C. 21.65	

Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers	Base Per 100 Lb.
2100* (1/2% Nickel, 0.10% to 0.20% Carbon)	\$3.20 to \$3.25
2300 (3/4% Nickel)	4.35 to 4.50
2500 (5% Nickel)	5.50 to 5.65
3100 (Nickel Chromium)	3.40 to 3.50
3200 (Nickel Chromium)	5.00 to 5.25
3300 (Nickel Chromium)	7.00 to 7.25
3400 (Nickel Chromium)	6.25 to 6.50
5100 (Chromium Steel)	3.40 to 3.50
5200* (Chromium Steel)	7.00 to 7.50
6100 (Chrom. Vanadium bars)	4.30
6100 (Chrom. Vanad. spring steel)	3.80
9250 (Silicon Manganese spring steel)	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.)	4.10 to 4.20
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.30
Chromium Molybdenum bars (0.80-1.10 Chrom., 0.25-0.40 Molyb.)	4.25 to 4.35
Chromium Molybdenum bars (0.50-0.70 Chrom., 0.15-0.25 Molyb.)	3.40 to 3.50
Chromium Molybdenum spring steel (1-1.25 Chrom., 0.30-0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/2-in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Rails

	Per Gross Ton
Standard, f.o.b. mill.....	\$43.00
Light (from billets), f.o.b. mill.....	36.00
Light (from rail steel), f.o.b. mill.....	24.00
Light (from billets), f.o.b. Ch'go mill.....	\$36.00 to \$38.00

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, 1/2 in. and larger.....	\$2.80 to \$3.00
Spikes, 1/2 in. and smaller.....	2.90 to 3.25
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	1.90 to 4.50
Tie plates, steel.....	2.25 to 2.35
Angle bars.....	2.75

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld					
Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/4.....	45	19 1/2	1/4 to 3/8.....	+11	+20
1/2.....	51	25 1/2	1/2.....	22	3
3/4.....	56	32 1/2	3/4.....	28	11
1.....	60	38 1/2	1 to 1 1/4.....	30	12
1 to 2.....	62	50 1/2			
Lap Weld					
2.....	55	43 1/2	2.....	23	7
2 1/2 to 3.....	59	47 1/2	2 1/2.....	26	11
7 and 8.....	56	43 1/2	3 to 6.....	28	18
9 and 10.....	54	41 1/2	7 to 12.....	26	11
11.....					

ing lines, but producers here view this as a distant possibility and not likely to be placed this winter. The Phoenix Utility Co., a company affiliated with the General Electric Co., is in the market for 1300 tons of 18-in. pipe for a gas line in the Southwest. Demand for butt welded pipe is very quiet. A considerable falling off in the demand for gas well lap welded pipe has cut backlogs to about three weeks' full operation. Little difficulty is now experienced in getting reasonably prompt shipments of most sizes, and this condition is expected to continue beyond the end of the year. Mill prices have held so long as to be regarded as fixtures. Larger locomotive orders are helping sales of superheater tubes, but boiler tubes generally are quiet, and mechanical tubing awaits larger automobile production. Discounts are given on page 1581.

Sheets.—The market still shows variation both in prices and in business. Smaller producers need orders badly enough to be flexible as to prices, but larger makers still have backlogs to work on and are holding for full quotations. Not much interest on the part of buyers is yet evident in first quarter tonnages, and the indications are that, with no price advances in prospect, there will be a continuation of the specification-with-order buying of the past year. Some fair-sized releases against suspended shipments of automobile body sheets are noted, one of them amounting to 1600 tons, but formal first quarter contracts are few and small. Released tonnages are against sales expectations for motor vehicles in January. Youngstown district sheet mill operations are barely 60 per cent this week, and the general average for the country is not over 70 per cent, even counting the American Sheet & Tin Plate Co. at 80 per cent. Prices are given on page 1581.

Tin Plate.—The American Sheet & Tin Plate Co. has decided to dismantle its Crescent works, Cleveland, a six-mill unit, leaving it with a total of 256 mills until the completion of its addition at Gary, Ind. On the new basis, it has 97½ per cent of its capacity in operation and late this week will have all available capacity engaged, with the resumption of operation at Labelle works, Wheeling, W. Va., a 10-mill plant. The American and Continental can companies have not yet placed their tin plate business for the first half of 1927, but the expectation is that these requirements will equal and possibly exceed those for that period this year, when they aggregated more than 1,000,000 boxes monthly. Independent mill operations also are almost full, as there continues to be a good-sized export demand, which is being supplemented by specifications for January shipments from domestic quarters.

Cold-Finished Steel Bars and Shafting.—Releases by automobile parts makers swelled business in the past week, but the market is not active, and production is still at 50 per cent of capacity or less. Released shipments are a charge against order books and are encouraging only as they indicate the end of the limited buying by parts makers. Contracting for the first quarter of next year has not amounted to much. On current shipments, 2.30c., base Pittsburgh, is the ruling price, with 2.40c. asked for first quarter business.

Hot-Rolled Flats.—Business is a little better with-

out being good. The gain is ascribable to somewhat larger takings by automobile builders to piece out depleted stocks. Not much first quarter business has yet been placed. Prices are holding well.

Cold-Rolled Strips.—Not much improvement can be reported except that automobile makers are taking a little more steel to meet January sales and production expectations. Prices still show market irregularity and are favorable to large tonnage buyers. On small lots 3.40c. to 3.50c., base Pittsburgh, is still reported, but on carloads the maximum is 3.25c., and from that down to even below 3c. on business that some mill or another may deem desirable. The first quarter prices are not yet clearly defined. There are reports that a revision of the quantity differentials is being considered that would give a discount from the base price for large lots while maintaining present extras for small lots.

Bolts, Nuts and Rivets.—Some first quarter business in bolts and nuts is reported, but more generally buyers are holding back, feeling safe in the knowledge that prices are not to be higher. Some makers need early shipment business badly enough to shade prices. The market is still rather unsettled and easy on large lots of large rivets. Prices and discounts are given on page 1583.

Coke and Coal.—The market continues to weaken both on coal and coke on account of the indifference of consumers toward supplies. The latter feel that they cannot fail to benefit by waiting, and production of coal remains so heavy that the policy is bringing rewards. Small producers, in an effort to find a market for coal, are beginning to reduce wages, hoping in that way to be able to name prices that will produce business. Larger producers, however, are still well supplied with contract business and are neither cutting wages nor actively pressing coal for sale. Coke has weakened, because the limited market for coal has forced some Connellsville operators to convert coal into coke, and the market for that product is no wider than that in coal. The result is that \$4 per net ton at ovens is now the top price on furnace coke, while standard grade has sold at \$3.90 and there are offerings of coke just below standard at \$3.75. Spot foundry coke still ranges from \$5 to \$5.50 on good brands and from \$6 to \$7 on special brands.

Old Material.—The market does not show much life, but it is very steady on almost all grades. With consumers well supplied and short orders about completed, blast furnace grades are difficult to sell and asking prices are not easily obtained. Heavy melting steel is not to be had at less than \$17, and some consumers with rather exacting specifications say they can not buy at less than \$17.50. Practically the only trading in this grade is between dealers, and the ruling price on such transactions is \$17. Dealers would like to see prices go down to enable them to secure cheap material for their yards, but producers are not forcing sales, evidently because they have not so much to sell as recently. The past month has been one of light production by the automotive industry, and the steel-working industries have not been doing so well lately as they did in October and September.

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton

Heavy melting steel	\$17.00 to \$17.50
Scrap rails	16.25 to 16.75
No. 1 cast, cupola size	16.00 to 16.50
Compressed sheet steel	16.00 to 16.50
Bundled sheets, sides and ends	15.00 to 15.50
Railroad knuckles and couplers	18.50 to 19.00
Railroad coil and leaf springs	18.50 to 19.00
Low phosphorus blooms and billet ends	21.00 to 21.50
Low phosphorus mill plates	20.50 to 21.00
Low phosphorus, light grade	17.50 to 18.00
Low phosphorus punchings	18.50 to 19.00
Steel car axles	21.50 to 22.00
Cast iron wheels	16.00 to 16.50
Rolled steel wheels	18.50 to 19.00
Machine shop turnings	11.75 to 12.00
Short shoveling steel turnings	13.00 to 13.50
Sheet bar crops	17.50 to 18.00
Heavy steel axle turnings	15.50 to 16.00
Short mixed borings and turnings	12.75 to 13.00
Heavy breakable cast	15.00 to 15.50
Cast iron borings	12.75 to 13.00
No. 1 railroad wrought	13.00 to 13.50
No. 2 railroad wrought	17.00 to 17.50
Railroad or automobile malleable scrap	17.00 to 17.50

Warehouse Prices, f.o.b. Pittsburgh

	Base per Lb.
Tank plates	3.00c.
Structural shapes	3.00c.
Soft steel bars and small shapes	2.90c.
Reinforcing steel bars	2.90c.
Black sheets (No. 24 gage), 25 or more bundles	3.95c.
Galvanized sheets (No. 24 gage), 25 or more bundles	4.70c.
Blue annealed sheets (No. 10 gage), 25 or more sheets	3.40c.
Cold-finished shafting and screw stock—	
Rounds and hexagons	3.60c.
Squares and flats	4.10c.
Bands	3.60c.
Spikes, large	3.30c.
Small	3.80c. to 5.25c.
Boat	3.80c.
Bolts, track	4.90c.
Wire, black soft annealed, base per 100 lb.	\$3.00
Wire, galvanized soft, base per 100 lb.	3.00
Common wire nails, per keg	3.00
Cement coated nails, per keg	3.05

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and over.....	\$35.00
Rerolling, under 4-in. to and including 1½-in.	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars

	Per Gross Ton
Open-hearth or Bessemer.....	\$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger.....	\$35.00
Smaller than 8 in. x 2 in.	36.00

Skelp

	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base.....	\$45.00
Screw stock	\$5.00 per ton over base
Carbon 0.20% to 0.40%	5.00 per ton over base
Carbon 0.41% to 0.55%	5.00 per ton over base
Carbon 0.56% to 0.75%	7.50 per ton over base
Carbon over 0.75%	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is \$46. Cleveland mill base, \$45.

Prices of Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian.....	9.50c. to 10c.
Iron ore, Swedish, average 66% iron.....	9.50c.
Manganese ore, washed, 52% manganese, from the Caucasus.....	40c.
Manganese ore, high grade, nominal.....	35c. to 44c.
Tungsten ore, high grade, per unit, in 60% concentrates	\$11.75 to \$12.50

Chrome ore, Indian basic, 48% Cr₂O₃, crude, c.i.f. Atlantic seaboard

	Per Lb.
Molybdenum ore, 85% concentrates of MoS ₂ , delivered	50c. to 55c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	\$3.90 to \$4.00
Foundry, f.o.b. Connellsville prompt	5.00 to 6.00
Foundry, by-product, Ch'go ovens	9.75
Foundry, by-product, New England, del'd	13.00
Foundry, by-product, Newark or Jersey City, delivered.....	10.59 to 11.77
Foundry, Birmingham	5.50 to 6.00
Foundry, by-product, St. Louis or Granite City	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.75 to \$2.35
Mine run coking coal, f.o.b. W. Pa. mines	2.00 to 2.50
Mine run gas coal, f.o.b. Pa. mines	2.25 to 2.75
Steam slack, f.o.b. W. Pa. mines	1.75 to 1.90
Gas slack, f.o.b. W. Pa. mines.....	2.00 to 2.10

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$100.00
Foreign, 80%, Atlantic or Gulf port, duty paid	\$100.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%.....	\$40.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	\$35.00 to \$37.50
75%	145.00 to 150.00
	Per Gross Ton Furnace
10%	\$35.00
11%	37.00
	Per Gross Ton Furnace
12%	\$39.00
14 to 16%	\$45 to 46.00

Bessemer Ferrosilicon

	Per Gross Ton
F.o.b. Jackson County, Ohio Furnace	\$34.00
10%	36.00
11%	38.00

Silvery Iron

	Per Gross Ton
F.o.b. Jackson County, Ohio Furnace	\$25.50
6%	27.50
7%	28.50
8%	30.00
9%	32.00

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	\$1.05 to \$1.10
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	\$3.25 to \$4.00
Ferrocobaltititanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. Anniston, Ala., per net ton.....	\$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid,	\$17.00 to \$17.50
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

Fire Clay

	Per 1000 f.o.b. Works
High Duty	\$40.00 to \$43.00
Moderate Duty	\$38.00 to \$40.00
Pennsylvania	43.00 to 46.00
Maryland	55.00 to 75.00
New Jersey	40.00 to 43.00
Ohio	40.00 to 43.00
Kentucky	40.00 to 43.00
Illinois	40.00 to 43.00
Missouri	40.00 to 43.00
Ground fire clay, per ton.....	6.50 to 7.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	\$40.00 to \$43.00
Chicago	52.00
Birmingham	50.00
Silica clay, per ton.....	\$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard sizes, f.o.b. Baltimore and Chester, Pa.	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick

	Per Net Ton
Standard size	\$45.00

Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(Less-than-Carload Lots)

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes.....	50 and 10
Eagle carriage bolts.....	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads.....	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ½ x 4 in., 45, 10 and 5	
Larger and longer sizes.....	45, 10 and 5
Bolt ends with hot-pressed nuts.....	50, 10 and 10
Bolt ends with cold-pressed nuts.....	45, 10 and 5
Hot-pressed nuts, blank and tapped, square, 4.00c. per lb. off list	
Hot-pressed nuts, blank or tapped, hexagons, 4.40c. per lb. off list	
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. per lb. off list
Washers*	6.75c. to 6.50c. per lb. off list

*F.o.b. Chicago and Pittsburgh.
The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-punched nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagons nuts:	
½ in. and smaller, U. S. S.	80, 10 and 5
¾ in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ¾ in. and larger.....	75, 10, 10 and 5
Stove bolts in packages.....	80, 10 and 5
Stove bolts in bulk	80, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per 100 Net S.A.E. U.S.S.	Per 100 Net S.A.E. U.S.S.
¼-in.....	\$0.44 \$0.44	¾-in..... \$2.35 \$2.40
½-in.....	0.515 0.515	1-in..... 3.60 3.60
¾-in.....	0.62 0.66	1½-in..... 5.65 5.80
1-in.....	0.79 0.90	2-in..... 8.90 8.90
1½-in.....	1.01 1.05	2½-in..... 12.60 13.10
2-in.....	1.38 1.42	3-in..... 18.35 18.35
2½-in.....	1.70 1.73	3½-in..... 21.80 21.80

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh.....	\$2.45 to \$2.60
F.o.b. Cleveland	2.70
F.o.b. Chicago	2.60 to 2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh.....	70, 10 and 5 to 70 and 10
F.o.b. Cleveland	70, 10 and 5 to 70 and 10
F.o.b. Chicago	70, 10 and 5 to 70 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws.....	80 and 10
Milled standard set screws, case hardened.....	80 and 10
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U. S. S. thread.....	80, 10 and 10
Upset hex. cap screws, S.A.E. thread.....	80, 10 and 10
Upset set screws	80, 10 and 5
Milled studs	70 and 5

Chicago

Annual Record for Steel Shipments Broken—Total Specifications from Fabricators Large

CHICAGO, Nov. 30.—Shipments of finished and semi-finished steel from Chicago mills for the first 11 months of 1926 were greater than for all of 1925, which was the banner year, up to that time, in the history of the local industry. Fabricators have specified, against actual awards, fully 25 per cent more steel than in the first 11 months of last year. Rail shipments against contracts signed this fall are 15 per cent heavier than the average for a number of years past.

Shipments of plates, shapes and bars are holding steady. Specifications to mills are virtually as heavy as the tonnage being delivered, but new buying shows no greater activity than a week ago. A feature of the rail market is the placing of a total of 12,000 tons of standard-section rails by two Western railroads. Inquiries for track accessories aggregate 50,000 tons.

The Colorado & Southern is reported to have placed its fall contract for rails with the Colorado Fuel & Iron Co. The outstanding railroad equipment order is for 35 passenger cars, placed by the Union Pacific. The St. Paul inquiry for 1500 cars is facing further delays. The question now arises whether the receivers for the railroad have the authority to purchase new equipment in view of the fact that the property will soon formally pass into the hands of its new owners.

Pig Iron.—First quarter contracts are being closed, but at a slower rate than earlier in the month. Business placed up to Nov. 30 for the first three months of the coming year exceeds bookings at the corresponding date a year ago. November shipments are not equal to those of October. This in a large measure is a result of the inactivity of the automotive industry. Foundries with contracts from motor car builders could estimate their requirements closely, and as the automobile trade tapered off, they allowed stocks to run low. In view of reports that automobile shops will soon speed up, producers in this district look for sizable specifications from that source after Dec. 15. Three users of charcoal iron in the Chicago district have placed first quarter contracts at \$27.04, delivered. No advance sales of silvery are reported, current business being confined to a few small lots for prompt shipment.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25	\$21.00
Northern No. 1 foundry, sil. 2.25 to 2.75	21.50
Malleable, not over 2.25 sil.	21.00
High phosphorus	21.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	27.04
Southern No. 2 (all rail)	26.01
Southern No. 2 (barge and rail)	24.18
Low phos., sil. 1 to 2 per cent, copper free	\$31.50 to 32.50
Silvery, sil. 8 per cent	33.29
Bessemer ferrosilicon, 14 to 15 per cent	46.79

Ferroalloys.—The market is quiet except in ferromanganese, for which several first half contracts have been placed at \$100, seaboard. A seller is offering for immediate delivery at \$95, seaboard, about 200 tons that has been in warehouse at New Orleans.

We quote 80 per cent ferromanganese, \$107.56, delivered Chicago; 50 per cent ferrosilicon, \$85, delivered; spiegeleisen, 18 to 22 per cent, \$47.56, delivered Chicago.

Coke.—By-product foundry coke prices for delivery in 1927 have not been announced by local makers. Shipments in November were not equal to those of October. Lower shipments and the fact that at this time of the year some foundry coke is used for heating purposes are further indications of the gradual tapering off of the foundry melt. Spot buying is more active at \$10.25, local ovens, and \$10.75, delivered in the Chicago switching district.

Plates.—Orders for tankage material are small, but pending business is of encouraging proportions, aggregating 25,000 tons. Tank makers in this territory and west of Chicago are busy, and their specifications to mills are in good volume. Plate deliveries are prompt, and users are showing no interest in building up stocks, although the outlook for railroad car buying is better now than at any time in the past four or five months. Orders for tanks placed by oil producers and refiners have been large and these, combined with the plate requirements of the building industry, have kept Chicago district mills engaged at 75 per cent of capacity. Railroad equipment inquiries are for the most part small, but at the same time they are fairly numerous. The Chicago & North Western has placed three baggage cars, and it is reported that the Union Pacific will award 17 baggage cars this week. The Great Northern is in the market for 25 tank cars. The Chicago & Eastern Illinois has divided 2000 tons of repair material among five car builders. This is to be used to rebuild 300 cars in its own shops, where 1200 cars already have been repaired in a like manner. The Northern Refrigerator Car Co. has placed 201 refrigerator cars with the Pullman Car & Mfg. Corporation.

The mill quotation on plates is 2.10c. per lb., base, Chicago.

Structural Material.—Architects have submitted plans of the State Bank of Chicago to fabricators, who estimate that 12,000 tons of plates, shapes and bars will be required. The contract for the Chicago Central Court and Police Building, on which the American Bridge Co. was low with a lump sum bid, has not been signed, and there has been delay in making the award of 2200 tons for a power house for the Standard Oil Co. Building contracts are light at the moment, but the railroads are heavier buyers of bridge work. The Rock Island has placed 500 tons, and the Northern Pacific is asking for prices on a like tonnage. A number of promotional undertakings have again come to life, notable among them being the Lake View Apartment, which will require 1400 tons. Financing is said to have been arranged for a theater tower building, to be erected at 23 West Monroe Street, Chicago. Mills in this district have compiled figures that show that fabricators have taken 25 per cent more tonnage so far in 1926 than during the entire year 1925.

The mill quotation on plain material is 2.10c. per lb. base, Chicago.

Reinforcing Bars.—Bending shops are gradually reducing forces as the aggregate of awards tapers off. Inquiry is less active and appears to have settled down to its usual early winter gait. Small orders, which together with a few medium-sized contracts have been keeping shops running at 60 per cent of capacity, are almost wholly lacking. Bars for the Stickney, Ill., sewage treating plant have been arranged for. Six hundred tons will come from a warehouse and 3150 tons will be delivered by a Chicago mill. Prices show no tendency to strengthen, although some dealers are said to be holding to a minimum of 2.30c., warehouse, for lots of 400 tons and larger. New contracts and fresh inquiries are shown on page 1594.

Bars.—Specifications to mills for soft steel bars have taken a sharp upturn, the total for the week now closing being larger than for any like period in the last month and a half. Users are showing more interest in first quarter requirements, but advance sales are still few in number. By far the largest increase in demand is from the manufacturers of automobile parts. Makers of farm implements are also specifying more liberally. Users of iron bars are taking little interest in the market, and such business as is being placed comes from two or three railroads. November specifications to mills for rail steel bars were heavy, being in excess of those for October, which established a record for the year. Sales, however, are light, and shipments are now growing smaller as the winter advances. This hesitancy on the part of users is giving producers an opportunity to build fence post stocks, against which specifications will be issued soon after the end of the year. Backlogs are gradually being reduced and deliveries are more prompt. Deliveries now average two

and one-half weeks. Prices have not strengthened. In fact, more business is being taken at the quotation of 1.90c., Chicago, than was the case a week ago.

Mill prices per lb. are: Mild steel bars, 2.10c., base, Chicago; common bar iron, 2c. base, Chicago; rail steel bars, 1.90c. to 2c., base, Chicago.

Wire Products.—The jobbing trade is spotty, and the aggregate of all orders is smaller. Producers do not believe that the volume of orders is a true indication of the business being done by jobbers, since more effort than usual is being made to hold inventories to a minimum. In view of this reduction of stocks in second hands, buying from the mills is expected to increase materially early next year. On the whole, specifications to mills from the manufacturing trade are also lighter. The automobile accessory and parts trade, however, is more liberal in releasing shipping orders. Mill operations fell to 45 per cent during Thanksgiving week, but they now average close to 50 per cent of capacity. Mill prices are shown on page 1581.

Rails and Track Supplies.—Rail mill operations in this district are gradually being increased and now average not far from 80 per cent of capacity. The rail mill of the Steel Corporation was down for several weeks prior to Oct. 18, but since that time its weekly production has been increased steadily. Production of rails this fall is fully 15 per cent heavier than in the corresponding seasons for a number of years back. Two small Western railroads have placed a total of 12,000 tons of standard-section rails. Sales of accessories are light, totaling 4000 tons, but business in sight is large. The Pennsylvania, the Chesapeake & Ohio and the Baltimore & Ohio are in the market for a total of 35,000 tons of tie plates, spikes and bolts. Western railroads are inquiring for 15,000 tons of accessories. Light rails are in small demand.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

Hot-Rolled Strip.—The demand for hot-rolled strip is now light. Competition is keen, and prices, particularly on the narrower widths, are weaker. Ruling quotations on 6-in. and narrower material range from 2.50c. to 2.60c., with the bulk of transactions at, or close to, the lower figures.

Cast Iron Pipe.—The market is quiet, and there are fewer indications of winter buying. Merchants are taking pipe in small lots and in close conformity with the demand of their trade. Deliveries are easier, the average being about three weeks, although in some sizes shipments can be made in a week. The unsettled weather of the past few weeks has led many users to specify heavily, with the result that tonnage delivered has far exceeded pipe-laying programs. Consequently, at the moment, buyers are not pressing foundries. Simon Ryan, Chicago, is low on 200 tons for Glenview, Ill., and Jason Fry, Lake Forest, Ill., was the successful bidder on a contract for Waukegan, Ill. Toledo, Ohio, will lay 900 tons of 4 to 24-in. Classes B and C pipe,

which it purchased from the Government at a price said to have been \$5 below the lowest quotation made by a foundry.

We quote per net ton, delivered, Chicago, as follows: Water pipe, 4-in., \$51.20 to \$52.20; 6-in. and over, \$47.20 to \$48.20; Class A and gas pipe, \$4 extra.

Bolts, Nuts and Rivets.—In general this market is steady, with the industry as a whole operating at 65 to 70 per cent of capacity. Railroad specifications are tending to become lighter. Spot buying is in small volume, but first quarter contracts are now being submitted to purchasers.

Sheets.—Chicago district mills are operating at close to capacity, and with order books well filled, they see little possibility of a change before the end of the year. Specifications from the manufacturing trade are heavier. There is little change in the total volume of sheets taken by warehouses, but orders are noticeably smaller and more numerous. Specifications to mills for blue annealed sheets, which have been lagging behind both black and galvanized sheets, are larger, so that the demand for all grades is now about equal. First quarter buying is light, and in view of present contracts producers do not look for a heavy swing in forward contracting until late in January or early in February. Deliveries range from two to five weeks, depending on the product and rolling schedules. November shipments ran ahead of those for October, and the total for the first 11 months of this year compares favorably with shipments for any previous year in the history of Chicago producers.

Chicago delivered prices from mill are 3.25c. for No. 24 black; 2.55c. for No. 10 blue annealed; 4.10c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Old Material.—Mills have taken from 15,000 to 20,000 tons of heavy melting steel at \$13.50 per gross ton, delivered. Offers made late in the week at that price have been refused, and sellers are convinced that sales made in the near future will be at a lower figure. Dealers are buying this grade freely at \$13 per gross ton, delivered. Small users are showing no interest in the market. Several carlots of cast iron carwheels were sold to a melter at \$15 per gross ton, delivered. Hydraulic sheets are weaker, and recent sales to users show the top of the market to be \$11.50 per gross ton, delivered. Makers of borings are less active, and they are not altogether satisfied with the prices obtainable for that grade.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

Per Gross Ton

Heavy melting steel	\$13.00 to \$13.50
Frogs, switches and guards, cut apart, and miscellaneous rails	14.50 to 15.00
Shoveling steel	12.00 to 12.50
Hydraulic compressed sheets	11.00 to 11.50
Drop forge flashings	9.50 to 10.00
Forged cast and rolled steel carwheels	16.50 to 17.00
Railroad tires, charging box size	17.50 to 18.00
Railroad leaf springs, cut apart	16.50 to 17.00
Steel couplers and knuckles	15.50 to 16.00
Coil springs	17.25 to 17.75
Low phosphorus punchings	15.50 to 16.00
Axle turnings, foundry grade	12.00 to 12.50
Axle turnings, blast fur, grade	9.50 to 10.00
Relaying rails, 56 to 60 lb.	25.50 to 26.50
Relaying rails, 65 lb. and heavier	26.00 to 31.00
Rerolling rails	16.50 to 17.00
Steel rails, less than 3 ft.	16.25 to 16.75
Iron rails	12.50 to 14.00
Cast iron borings	9.50 to 10.00
Short shoveling turnings	9.50 to 10.00
Machine shop turnings	6.50 to 7.00
Railroad malleable	14.50 to 17.00
Agricultural malleable	15.00 to 15.50
Angle bars, steel	15.00 to 15.50
Cast iron carwheels	14.50 to 15.00

Per Net Ton

No. 1 machinery cast	16.00 to 16.50
No. 1 railroad cast	15.50 to 16.00
No. 1 agricultural cast	15.50 to 16.00
Stove plate	14.00 to 14.50
Grate bars	13.50 to 14.00
Brake shoes	13.00 to 13.50
Iron angle and splice bars	14.00 to 14.50
Iron arch bars and transoms	18.75 to 19.25
Iron car axles	22.00 to 22.50
Steel car axles	17.00 to 17.50
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	11.50 to 12.00
No. 1 busheling	10.25 to 10.75
No. 2 busheling	6.25 to 6.75
Locomotive tires, smooth	16.00 to 16.50
Pipes and flues	9.00 to 9.50

Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes	3.10c.
Mild steel bars	3.00c.
Reinforcing bars, billet steel	2.25c. to 2.60c.
Cold-finished steel bars and shafting—	
Rounds and hexagons	3.60c.
Flats and squares	4.10c.
Hoops	4.15c.
Bands	3.65c.
No. 24 black sheets	3.95c.
No. 10 blue annealed sheets	3.50c.
No. 24 galvanized sheets	4.80c.
Standard railroad spikes	3.55c.
Track bolts	4.55c.
Structural rivets	3.50c.
Boiler rivets	3.70c.
	Per Cent Off List
Machine bolts	50 and 5
Carriage bolts	47½
Coach or lag screws	55 and 5
Hot-pressed nuts, square, tapped or blank	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb.	\$3.30
Common wire nails, base per keg	3.05
Cement coated nails, base, per keg	3.05

New York

Lull in Pig Iron—Some First Quarter Steel Contracts Closed

NEW YORK, Nov. 30.—After a buying movement in which melters covered for probably 70 or 75 per cent of their requirements through the first quarter, it is not surprising that the market is inactive. Inquiry is light, and sales by local brokers during the week, consisting mainly of scattered, miscellaneous lots, totaled less than 6000 tons. The inquiries of the General Electric Co. for its New England plants and that of Abendroth Brothers, Port Chester, N. Y., for 1000 tons of foundry are still pending, although the latter tonnage is expected to be placed momentarily. On the whole, melters are not concerned about adding to their commitments at the present time. There appear to be no prospects for advances in prices; on the contrary, the tone of the market, if it has changed at all, is weaker, although there has been insufficient tonnage before the trade to give prices a real test. While there have been few suspensions of shipments against contracts, foundry operations are slowing up somewhat as the holidays approach. Moreover, with inventory-taking near at hand, melters as well as buyers of castings are commencing to take the usual precautions to keep their inventories down to a minimum.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices \$1.39 to \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	\$23.89 to \$25.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	24.39 to 25.52
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	24.89 to 26.02
Buffalo fdy., sil. 1.75 to 2.25 (all rail)	23.91
No. 2 Virginia fdy., sil. 1.75 to 2.25	28.04 to 29.54

Ferroalloys.—Negotiations for 1927 deliveries of ferromanganese continue, but not much is heard of final contracts for the 15,000 or 20,000 tons which is known to be before the market. Many consumers are fairly well supplied with alloy for January and perhaps February because of heavy specifications on 1926 contracts. There have been sales of a few carloads and small lots for delivery this year, all at \$100, seaboard or furnace. The spiegeleisen market is featureless, with little change from conditions prevailing a week ago. The higher grade is in rather limited supply at \$40, furnace, and the lower grade is almost unobtainable. Contracts for 1927 requirements for 50 per cent ferrosilicon and standard ferrochromium are being rapidly lined up at \$85 per ton, delivered, for the former, and at 11.50c. per lb. of contained chromium for the latter.

Reinforcing Bars.—The contract for bars for the Lincoln Highway viaduct in Newark, which was reported last week as probably going to Igoe Brothers, has not yet been let, and the delay is said to be a result of sharp competition in price. Large tonnages in recent weeks are said to have met with similar competition, and at least one of the large distributors in this territory is known to have shaded the mill price of 2c., Pittsburgh. Lots of less than 100 tons continue to bring 2.10c. The New York warehouse price continues to be 3.15c., delivered at job, and Youngstown warehouses are quoting 2.50c., or 2.87½c., delivered New York.

Finished Steel.—With the closing of books on November business local steel selling offices found that tonnage had not fallen greatly below that of October, earlier estimates of about 10 or 15 per cent decline being fairly well borne out. The largest Eastern maker of structural shapes reports that bookings in the last week or 10 days showed a marked increase and brought the total for the month well up to the October sales. Most of the mills have opened their books for first quarter contracting, but consumers are proceeding slowly. In the case of plates, shapes and bars, present prices of 1.90c. for plates and 2c. for shapes and bars

have been named, but the price situation in sheets is less definite. Not many contracts have been made, some mills preferring to hold off until the price situation has become clarified, but a few contracts for blue annealed at 2.30c., Pittsburgh, and 3c. for black have been entered. These prices are \$2 a ton below the quotations named a few weeks ago by many of the mills for first quarter, and are approximately the prices obtaining on carload lots for delivery over the remainder of the year. Cold-rolled strip steel prices continue weak, sales being reported at 3c., Pittsburgh. Two of the most favorable factors in the steel situation are the prospect of larger buying of railroad equipment and the anticipated increase in the volume of structural steel work. The Norfolk & Western Railroad has inquired for 2000 freight cars and the week's business includes 800 cars ordered by two roads from the Bethlehem Steel Corporation. Fully 50,000 tons of structural steel work, on which decisions may be reached

Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes.....	3.34c.
Soft steel bars and small shapes.....	3.24c.
Iron bars.....	3.24c.
Iron bars, Swedish charcoal.....	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock—	
Rounds and hexagons.....	4.00c.
Flats and squares.....	4.50c.
Cold-rolled strip, soft and quarter hard.....	6.25c.
Hoops.....	4.49c.
Bands.....	3.99c.
Blue annealed sheets (No. 10 gage).....	3.89c.
Long terne sheets (No. 24 gage).....	5.80c.
Standard tool steel.....	12.00c.
Wire, black annealed.....	4.50c.
Wire, galvanized annealed.....	5.15c.
Tire steel, 1½ x ¼ in. and larger.....	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger.....	3.65c.
Open-hearth spring steel, bases.....	4.50c. to 7.00c.

	Per Cent Off List
Machine bolts, cut thread.....	.40 and 10
Carriage bolts, cut thread.....	.30 and 10
Coach screws.....	.40 and 10

	Per 100 Ft.
Boiler Tubes—	
Lap welded steel, 2-in.....	\$17.33
Seamless steel, 2-in.....	20.24
Charcoal iron, 2-in.....	25.00
Charcoal iron, 4-in.....	67.00

	Black	Galv.
Standard Steel—		
½-in. butt.....	46	29
¾-in. butt.....	51	37
1-in. butt.....	53	39
2½-6-in. lap.....	48	35
7 and 8-in. lap.....	44	17
11 and 12-in. lap.....	37	12
Wrought Iron—		
½-in. butt.....	4	+19
¾-in. butt.....	11	+9
1-1½-in. butt.....	14	+6
2-in. lap.....	5	+14
3-6-in. lap.....	11	+6
7-12-in. lap.....	3	+16

Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100 lb. base box.....	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC.....	\$9.70	\$12.10
IX.....	12.00	14.25
IXX.....	13.90	16.00

Terne Plate (14 x 20 in.)

IC—20-lb. coating.....	\$10.00 to \$11.00
IC—30-lb. coating.....	12.00 to 13.00
IC—40-lb. coating.....	13.75 to 14.25

Sheets, Box Annealed—Black, C. R. One Pass

	Per Lb.
Nos. 18 to 20.....	4.15c.
No. 22.....	4.30c.
No. 24.....	4.35c.
No. 26.....	4.45c.
No. 28*	4.60c.
No. 30.....	4.85c.

Sheets, Galvanized

	Per Lb.
No. 14.....	4.50c. to 4.75c.
No. 16.....	4.60c. to 4.85c.
No. 18.....	4.75c.
No. 20.....	4.90c.
No. 22.....	4.95c.
No. 24.....	5.10c.
No. 26.....	5.35c.
No. 28*	5.60c.
No. 30.....	6.00c.

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

within a week or two, is pending, including 23,500 tons for New York subways and 10,500 tons for a convention hall at Atlantic City, N. J., on which bids close this week.

We quote mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. per lb.; plates, 2.24c.; structural shapes, 2.34c.; bar iron, 2.24c.

Warehouse Business.—Although there has been a considerable decline in the volume of purchasing from stock in the past week to 10 days, November was one of the sizable months of the year with most jobbers in this district. In the case of a large independent warehouse November business exceeded that of October. Demand for structural material continues in fair volume despite the lateness of the season, orders still ranging from 5 to 10 tons in many instances. Black and galvanized sheets are active, with prices firm.

Cast Iron Pipe.—Makers are offering the usual winter delivery concessions of \$1 to \$2 per ton, but business continues light in contrast with the active market that prevailed at this time last year. Most producers of bell and spigot, gas and water pipe are booked until the end of the year in small sizes, but there is plenty of room on order books for large sizes and desirable concessions seem possible on specifications running above 12-in. There are several small inquiries in the market for gas pipe for spring delivery, and there is the usual purchasing of small lots of water pipe to fill in on contracts.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$49.60 to \$51.60; 4-in. and 5-in., \$54.60 to \$56.60; 3-in., \$64.60 to \$66.60; with \$5 additional for Class A and gas pipe.

Old Material.—There is still a well developed downward tendency in the prices of all grades of scrap. Eastern Pennsylvania consumers of heavy melting steel are not inclined to contract except at concessions of 50c. to \$1 per ton from brokers' asking prices. In the meantime current contracts are being fulfilled at \$15.50 per ton, delivered. A Pottsville user of yard steel is unwilling to pay above \$13.50 per ton, delivered, and a Phoenixville plant has reduced its offering prices on machine shop turnings and bundled skeleton to \$13 per ton, delivered, and on stove plate to \$13.50 per ton. Although brokers have made efforts to buy heavy melting steel at \$15 per ton, delivered eastern Pennsylvania, it is asserted that little comes out at this price, despite the steady flow of tonnage from dealers at the \$15.50 price. A local consumer of No. 1 machinery cast has purchased at \$16.25 per ton, delivered. Brokers shipping to a Florence, N. J., foundry are offering \$16 per ton, delivered, for heavy breakable cast, or about \$13 per ton, New York.

Buying prices per gross ton, New York, follow:

Heavy melting steel (yard).....	\$9.50 to \$10.00
Heavy melting steel (railroad or equivalent)	11.75 to 12.85
Rails for rolling.....	12.75 to 13.25
Steel car axles.....	19.50 to 20.00
Iron car axles.....	24.00 to 24.50
No. 1 railroad wrought.....	14.00 to 15.00
Forge fire	9.50 to 10.00
No. 1 yard wrought, long.....	13.00 to 14.00
Cast borings (steel mill).....	9.25 to 9.75
Cast borings (chemical).....	13.00 to 13.50
Machine shop turnings.....	9.25 to 9.75
Mixed borings and turnings.....	9.25 to 9.75
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	9.75 to 10.25
Stove plate (steel mill).....	9.25 to 9.75
Stove plate (foundry).....	11.00 to 11.50
Locomotive grate bars.....	10.50 to 11.00
Malleable cast (railroad).....	16.00 to 16.50
Cast iron carwheels.....	12.00 to 12.50
No. 1 heavy breakable cast.....	11.75 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$16.00 to \$16.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	14.50 to 15.00
No. 2 cast (radiators, cast boilers, etc.)	13.50 to 14.00

Coke.—The two New England producers of by-product fuel have opened their books for first half contracts in foundry coke. A local dealer representing one of these companies has already closed contracts for 20,000 tons. While there are indications that foundry melt is receding somewhat, specifications against fourth quarter contracts for foundry coke are in good volume. Prices on standard brands of Connellsville foundry coke are substantially unchanged at \$5.25 to \$5.75 per

net ton, ovens. Furnace coke is slightly weaker, ranging from \$4 to \$4.50, Connellsville. Spot demand for coke is light. By-product foundry coke produced in this district is unchanged at \$10.59 to \$11.77 per net ton, delivered Newark or Jersey City.

Cleveland

Releases in Sheets from Motor Car Builders—Sheet Prices Weaken

CLEVELAND, Nov. 30.—Good-sized releases and two or three round-lot orders for sheets came from the automotive industry during the week, but with this exception the market shows no improvement. November ends with a perceptible tapering off in business as compared with the first of the month. With inventory time approaching consumers are still restricting orders to small lots for immediate needs. The effect of the slowing down of buying is reaching back to blast furnace operations. The Corrigan, McKinney Steel Co. will bank two of its four Cleveland blast furnaces tomorrow. This reduction in operations appears to be due both to the reduced demand for pig iron and to the curtailment in orders for semi-finished steel that has resulted from the slowing down by the automobile manufacturers. While there is a little expectation of an improvement in this field in December, the feeling in the automotive industry seems to be very optimistic and some of the motor car builders are said to be planning for a very large production in the early months of next year.

Two new inquiries for Lake boats have come out, requiring over 5000 tons of steel. With the approval by the Interstate Commerce Commission of the plans of the Chesapeake & Ohio Railway to build 85 miles of new line in Ohio to connect with the Hocking Valley Railway, bids are being taken for bridges for the new railroad, which will require 10,000 tons of steel.

Steel bars are unchanged at 1.90c. to 2c., Cleveland, for small sizes, with the mills outside of Cleveland holding to 2c., Pittsburgh. No shading is reported of the prices of 1.90c., Pittsburgh, on plates and 2c. on structural material.

Pig Iron.—Sales the past week were very light, not only in this immediate vicinity but in the surrounding territories having furnaces operated by Cleveland interests. Few consumers are showing enough interest in the market to sound out the price situation. In Cleveland, foundry and malleable iron for local delivery have declined 50c. a ton to \$20 at furnace, this being the only definite price change during the week. Cleveland producers quote \$19, furnace, for outside shipment, and that has become the more common price in the Valley district, although some Valley producers are still asking \$20, furnace. In Michigan \$20.50, furnace, is the more general quotation, although \$21 is being asked for shipment to some points. Quotations by Lake producers outside of Cleveland range from \$19 to \$20, furnace. A Cleveland consumer has purchased 3300 tons of basic iron from a Buffalo producer, and this was shipped during the week by water at probably a lower transportation rate than the rail rate. Sales during the week were in small lots, some for prompt shipment and some for the first quarter. A favorable feature of the situation is an improvement in shipping

Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes.....	2.00c.
Mild steel bars.....	2.00c.
Cold-finished rounds and hexagons.....	2.90c.
Cold-finished flats and squares.....	4.40c.
Hoops and bands.....	2.45c.
No. 24 black sheets.....	3.80c.
No. 10 blue annealed sheets.....	3.25c.
No. 24 galvanized sheets.....	4.65c.
No. 9 annealed wire, per 100 lb.....	\$3.00
No. 9 galvanized wire, per 100 lb.....	3.45
Common wire nails, base, per keg.....	3.00

orders from the automotive industry. One leading Detroit car builder and Cleveland foundries making cylinder blocks that took little iron this month have issued liberal releases for December shipment. In spite of suspensions, shipments by some of the producers during November will equal their production, owing to the fact that they were somewhat oversold. The Stewart Furnace Co. plans to blow in its Sharon, Pa., furnace about Dec. 15 on low phosphorus iron. There is some inquiry for this grade, but the supply for early shipment is scarce.

Quotations below are per gross ton and, except on basic and low phosphorus iron, are delivered Cleveland, including a 50c. switching charge for local iron. Ohio silvery and Southern iron prices are based on a \$3.00 freight rate from Jackson and \$6.01 from Birmingham:

Basic, Valley furnace.....	\$18.50 to \$19.00
Northern No. 2 fdy., sil. 1.75 to 2.25.....	20.50
Southern fdy., sil. 1.75 to 2.25.....	26.01
Malleable.....	20.50
Ohio silvery, 8 per cent.....	31.50
Standard low phos., Valley furnace.....	28.00

Sheets.—Some of the Detroit automobile companies released good specifications during the week, and two or three round-lot orders came from the same source, including one for 2500 tons of automobile body sheets for December-January shipment. Outside of this activity the market is very dull, and prices are weak except on automobile body sheets. Production by Ohio mills has been further curtailed. On black sheets 2.90c., base Pittsburgh, has become fairly common, and 3c., Valley, is being quoted. Blue annealed sheets are not holding firmly to 2.30c., Pittsburgh, and some quotations of 2.30c., Valley, are appearing. On galvanized sheets 3.85c., Valley can be done. The above prices are for early shipment. There have been some sales of black sheets at 3c., Pittsburgh, for the first quarter, and of blue annealed sheets at 2.30c., Pittsburgh, for shipments extending through February.

Strip Steel.—Cold-rolled strip steel is weak. For large lots 3c., Cleveland, has become the more common quotation. There is a range up to 3.25c. for car lots, with some mills still asking 3.40c. for small lots. Tube stock ranges from 2.90c. to 3c. Hot rolled strip prices appear to be holding fairly firm. New demand continues very light.

Warehouse Business.—Orders are fair in number but mostly for very small lots. Sheets are moving very slowly. Regular prices are being maintained.

Reinforcing Bars.—New inquiry is light, and prices are untested. While 2c., Pittsburgh, is the asking price for billet steel bars, this could probably be shaded.

Bolts, Nuts and Rivets.—The demand for bolts and nuts continues light, and this is attributed partly to the desire of consumers to carry small inventories. Some makers are allowing the extra 5 per cent carlot discount for less than carloads for December shipment. Local makers have not yet opened their books for the first quarter but expect to continue present discounts for that delivery. The demand for rivets continues fairly good.

Iron Ore.—All docks at the head of the Lakes have made their last ore shipments for the season, but there are still several cargoes to be shipped from Escanaba to Cleveland and to a Lake Michigan port, and some of these will not be loaded until the latter part of the week. November shipments will be close to 4,000,000 tons. With 54,568,000 tons moved up to Nov. 1 and several cargoes shipped in December, the total movement for the season both by rail and water will probably be over 60,000,000 tons.

Semi-Finished Steel.—A local producer has opened books for the first quarter at the current prices of \$36 for sheet bars and \$35 for large billets and slabs and reports some sales for that delivery. Specifications continue very light for all forms of semi-finished steel.

Ferroalloys.—There has been considerable activity in 50 per cent ferrosilicon. Most of the consumers in this territory have closed for their 1927 requirements at \$85 per gross ton. Most consumers have also closed

for their ferrochromium for 1927 at 11½c. per lb. Buyers are holding off in their purchases of ferromanganese for the first half.

Coke.—Foundry coke is easier, with quotations ranging from \$4.75 to \$5.75, ovens, for standard Connellsville brands, although as high as \$7 is still asked for premium makes. Heating coke is also easier, ranging from \$3.50 to \$4 at ovens. Furnace coke ranges from \$4 to \$4.50, ovens, for prompt shipment. There is little demand for by-product coke for domestic use, as dealers have good stocks.

Old Material.—There is a limited demand from dealers for blast furnace grades and heavy melting steel to fill outstanding orders. Prices show virtually no change. Dealers are paying \$16 for heavy melting steel scrap for Valley shipment, and some blast furnace scrap has sold at \$11.25 for Cleveland delivery. Local dealers are getting \$14 to \$14.50 for No. 1 busheling for Youngstown delivery. Some dealers are cleaning out their yard stocks by filling orders out of yard material rather than by buying in the market. New railroad lists include 35,000 tons offered by the Pennsylvania Railroad, 4000 to 5000 tons by the Big Four and blank list advertised by the Michigan Central. December scrap lists of the Detroit automobile companies are much smaller than a month ago.

We quote per gross ton delivered consumers' yards in Cleveland:

Heavy melting steel.....	\$14.50 to \$14.75
Rails for rolling.....	16.25 to 16.50
Rails under 3 ft.....	16.50 to 17.00
Low phosphorus billet, bloom and slab crops.....	18.00 to 18.50
Low phosphorus sheet bar crops.....	17.00 to 17.50
Low phosphorus plate scrap.....	16.50 to 17.00
Low phosphorus forging crops.....	17.00 to 17.50
Cast iron borings.....	11.00 to 11.25
Machine shop turnings.....	9.00 to 9.25
Mixed borings and short turnings.....	11.00 to 11.25
Compressed sheet steel.....	13.50 to 14.00
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	14.00 to 14.50
Railroad malleable.....	16.50 to 17.00
Light bundled sheet stampings.....	12.00 to 12.50
Steel axle turnings.....	12.50 to 13.00
No. 1 cast.....	16.50 to 17.00
No. 1 busheling.....	12.00 to 12.50
No. 2 busheling.....	11.00 to 11.25
Drop forge flashings, 15 in. and under.....	11.50 to 12.00
Railroad grate bars.....	12.50 to 13.00
Stove plate.....	12.50 to 13.00
Pipes and flues.....	10.00 to 10.50

Philadelphia

Decline in Sales Believed Temporary— Little First Quarter Buying

PHILADELPHIA, Nov. 30.—The decline in the volume of pig iron and steel business is causing no apprehension, sellers in general considering the present curtailment of activity as a natural development of the season that cannot continue for long with consumers covered only for immediate needs. Although the usual seasonal decline in building has developed, the number of projects in prospect is considered quite reassuring.

The pig iron market is as quiet as at any time in the past few months, and while buyers have been inclined to delay as a result of the ending of the British strike and the consequent prospect of easier fuel, producers are inclined to the view that the first quarter will see a strong and steady fuel market, supported by slightly more than ordinary purchasing by users anticipating a possible coal strike here.

The railroads show every evidence of continued activity in purchasing, and the recent locomotive buying promises to continue, with 20 placed by the Baltimore & Ohio last week and the Missouri Pacific reported about to contract for 48 locomotives.

Pig Iron.—The effort to establish foundry iron on a \$23 base has apparently ceased, and the market has settled down to a level of \$22.50 per ton, with \$22.75 occasionally obtained on small lots. In the absence of large purchasing, the actual market on a desirable tonnage is rather indeterminate. Foreign iron is no

longer a factor at present prices. Sellers of Dutch iron are unable to obtain any quantities, the furnaces being sold well ahead. No orders for basic are reported, but it is rather generally conceded by sellers that purchases could be made at from \$22.50 to \$23.25 per ton, delivered. Included in the week's imports are 2500 tons of pig iron from Germany.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	1.75 to 2.25	\$23.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	2.25 to 2.75	23.76
East. Pa. No. 1X, 2.25 to 2.75 sil.	2.25 to 2.75	24.26
Basic delivered eastern Pa.		\$22.50 to 23.25
Gray forge	22.50 to 23.25	23.25
Malleable	23.50 to 24.00	24.00
Standard low phos. (f.o.b. New York State furnace)	24.00 to 25.00	25.00
Copper bearing low phos. (f.o.b. furnace)	25.00 to 26.00	26.00
*Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67	28.67
*Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17	29.17

*The freight rate from Virginia furnaces to Philadelphia is \$5.17 per gross ton.

Ferroalloys.—Moderate purchasing of ferromanganese for first quarter and first half continues with domestic makers and the Norwegian producer most active. Thus far consumers have not been inclined to enter into large contracts with British sellers, largely because of doubt as to deliveries. Quotations are firm at \$100 per ton, seaboard or furnace.

Billets.—Sales are confined to small lots, but the total business is satisfactory and prices are firm at \$35 per ton, Pittsburgh, for rerolling quality and \$40 per ton, Pittsburgh, for forging billets.

Bars.—The market is firm at 2c. per lb., Pittsburgh, with demand not particularly active. There are numerous small inquiries in the market for reinforcing bars, and current purchasing is good considering the lateness of the season.

Shapes.—Competition among fabricators is keen, and quotations are often low. Mill prices continue at 1.90c. to 2c. per lb., Pittsburgh, with very little purchasing for first quarter. While there has been a decline in building activity, there are several desirable tonnages before the market, including an office building for the Philadelphia Electric Co., which calls for about 3800 tons of steel, 1400 tons being plates.

Plates.—Demand continues in fair volume, but with the exception of a few renewals of contracts by regular customers, buyers are not inclined to enter into commitments for first quarter. Buyers, expecting no advance in price from the present level of 1.90c. to 2c. per lb., Pittsburgh, feel certain of deliveries when needed. In addition to the plates that will be consumed in locomotive building, two buildings in Philadelphia involve small lots. The Philadelphia Electric Co. office building will take about 1400 tons, and the addition to the Baldwin Locomotive Works at Eddystone, about 500 tons.

Warehouse Business.—Purchasing from stock has declined. The tendency toward concessions in the price of bars and small shapes is still in evidence, as low as 2.90c. per lb. having been done, although this is the exception, the usual quotation ranging from 3c. to 3.20c. per lb., base.

Sheets.—With sheets still being shipped on orders at 2.30c. for blue annealed, 3c. for black and 3.85c. for galvanized, buyers are not inclined to pay the \$2 a ton higher price for first quarter delivery. It is reported that there has been some selling of blue annealed sheets for delivery next year at 2.30c. per lb., base, but no large contracts are mentioned.

Old Material.—Consumers of steel are still willing to purchase at lower prices than brokers are willing to accept. Heavy breakable cast shows a slight advance, with the purchase of a small tonnage by a Claymont, Del., consumer at \$16.50 per ton. Efforts to obtain more than \$18.50 per ton for couplers and knuckles and railroad springs have not been successful. Heavy melting steel is quiet at \$15.50 to \$16 per ton, delivered.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	\$15.50 to \$16.00
Scrap rails	15.50 to 16.00
Steel rails for rolling	17.00 to 17.50
No. 1 low phos., heavy, 0.04 per cent and under	20.00 to 21.00
Couplers and knuckles	18.50
Rolled steel wheels	18.50
Cast iron car wheels	16.50 to 17.00
No. 1 railroad wrought	17.00 to 17.50
No. 1 forge fire	13.00 to 13.50
Bundled sheets (for steel works)	13.00
Mixed borings and turnings (for blast furnace)	12.50 to 13.00
Machine shop turnings (for steel works)	13.00
Machine shop turnings (for rolling mill)	13.00 to 13.50
Heavy axle turnings (or equivalent)	14.00 to 14.50
Cast borings (for steel works and rolling mill)	13.50
Cast borings (for chemical plant)	15.00 to 16.00
No. 1 cast	17.00 to 17.50
Heavy breakable cast (for steel works)	16.00 to 16.50
Railroad grate bars	13.00 to 13.50
Stove plate (for steel works)	13.00 to 13.50
Wrought iron and soft steel pipes and tubes (new specifications)	14.00 to 14.50
Shafting	21.00 to 22.00
Steel axles	23.00 to 24.00

Strength of Web Plate Columns

"Compressive Strength of Column Web Plates and Wide Web Columns" is the title of Technologic Paper No. 327 of the Bureau of Standards. It was prepared by Robert S. Johnston of the Bureau, and consists of 52 pages. Verification was sought of the general rule that wide web plates in compression should not exceed in width 30 times the plate thickness. The strength of laterally supported wide web columns was studied and a comparison made of the merits of single-plate and double-plate webs of equal thickness.

Tests showed that, while the common design rule is conservative, buckling strength depends also upon the mechanical properties of the material. The buckling resistance of a plate may be computed when the material is known.

With identical material, there appears to be no advantage between single and double-plate webs, as demonstrated by the few tests made. The stitch riveting used was sufficient to make the plates act as a unit. No decided detrimental effects from this riveting were indicated.

Tests were made in the 10,000,000-lb. vertical testing machine illustrated on page 1347 of THE IRON AGE for Nov. 11, as well as in a smaller machine used for smaller sections. The column test specimens were all 10 ft. long, consisting of plate and four angles, the dimension back to back of the angles being 35 in.

A machine for refacing poppet valves, such as are used in an automobile engine, has been developed by the Black & Decker Mfg. Co., Towson, Md. It employs two individual motors, one driving the work and the other driving the grinding wheel. The work head and the grinding head operate on "V" slides; the former is adjustable to any angle from zero to 90 deg.

Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, $\frac{1}{4}$ -in. and heavier	2.80c. to 3.00c.
Tank steel plates, $\frac{3}{8}$ -in.	3.00c. to 3.20c.
Structural shapes	2.75c. to 3.00c.
Soft steel bars, small shapes and iron bars (except bands)	3.00c. to 3.20c.
Round-edge iron	3.50c.
Round-edge steel, iron finished, $1\frac{1}{2}$ x $1\frac{1}{2}$ in.	3.50c.
Round-edge steel, planished	4.30c.
Reinforcing steel bars, square, twisted and deformed	3.00c.
Cold-finished steel, rounds and hexagons	4.00c.
Cold-finished steel, squares and flats	4.50c.
Steel hoops	4.00c. to 4.25c.
Steel bands, No. 12 gage to $\frac{1}{8}$ -in., inclusive	3.75c. to 3.90c.
Spring steel	5.00c.
No. 24 black sheets	4.35c.
No. 10 blue annealed sheets	3.50c.
No. 24 galvanized sheets	5.30c.
Diamond pattern floor plates— $\frac{1}{4}$ -in.	5.30c.
$\frac{3}{8}$ -in.	5.50c.
Rails	3.20c.
Tool steel	8.50c.
Swedish iron bars	6.60c.

San Francisco

New Structural Projects Total 7000 Tons —Shipment of German Coke Arrives

SAN FRANCISCO, Nov. 27 (*By Air Mail*).—Conspicuous among developments in a week shortened by the Thanksgiving holiday and marked by unusually heavy rains, were the arrival of a fresh shipment of 4000 to 5000 tons of German coke and the completion of plans for several new structural projects calling for over 7000 tons of fabricated steel. While there is still discussion among local buyers about the firmness of prevailing quotations on the heavier forms of steel, nothing below 2.35c., c.i.f. Coast ports, has been quoted on shapes, and virtually all local representatives of Eastern mills continue to ask 2.30c. on plates. In connection with the latter it may be mentioned that a large buyer in California recently placed a moderate-sized tonnage with an Eastern producer at 2.30c., after testing the market to ascertain whether a lower quotation could be obtained.

Pig Iron.—No first quarter business has come out during the past week, and all recent sales have been confined to small lots. Quotations are unchanged.

	Per Gross Ton
*Utah basic	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25...	25.00 to 26.00
**Indian foundry, sil. 2.75 to 3.25..	25.00
**German foundry, sil. 2.75 to 3.25.	24.25

*Delivered San Francisco.

**Duty paid, f.o.b. cars San Francisco.

Shapes.—Fabricated steel lettings during the week will take about 700 tons of material, and fresh inquiries call for over 7000 tons. The largest individual letting, 300 tons for the Nevada Consolidated Copper Co., Ruth, Nev., was taken by the Kansas City Structural Steel Co. The largest individual inquiry, 1000 tons, is for a bridge across the Blythe River in Colorado. The Virginia Bridge & Iron Co. is low bidder on 1400 tons for a bank building in San Diego, Cal. Eastern mills continue to quote plain material at 2.35c., c.i.f. Coast ports.

Plates.—The Water and Power Commission, Los Angeles, has placed 228 tons for tank work with the Lacy Mfg. Co. The East Bay Municipal Utility District, Oakland, Cal., is taking bids on 550 tons for a pipe line. Lettings and inquiries call for small tonnages only. Eastern mills quote plates at 2.30c., c.i.f. Coast ports.

Bars.—Local reinforcing bar jobbers booked about 600 tons during the week. Few fresh inquiries call for lots of 100 tons or over. In Oakland, Cal., a letting of 150 tons for a furniture warehouse was taken by a distributor of foreign bars. The minimum quotations of local jobbers in concrete bars range from about 2.30c. to 2.45c., base, per lb., on lots of 200 tons.

Cast Iron Pipe.—Included among the larger lettings of the week are the following: The American Cast Iron Pipe Co. took 1770 tons of 4 and 8-in. Class B pipe, for the city of Los Angeles, and 50 tons of 6-in. Class B for the city of Whittier, Cal. B. Nicoll & Co. took 60 tons for the city of Stockton, Cal. Two fresh inquiries put out by the city of Los Angeles call for a total of 1961 tons. Of this, 1817 tons is 6, 12 and 24-in. Class B pipe, and 144 tons is special pipe. Cast iron pipe is now quoted at \$49 to \$50, base, f.o.b. dock, San Francisco.

Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes.....	3.30c.
Mild steel bars and small angles.....	3.30c.
Small channels and tees, ¼-in. to 2¼-in..	3.90c.
Spring steel, ¼-in. and thicker.....	5.00c.
No. 24 black sheets.....	4.90c.
No. 28 black sheets.....	5.15c.
No. 10 blue annealed sheets.....	4.00c.
No. 24 galvanized sheets.....	5.65c.
No. 28 galvanized sheets.....	6.15c.
Common wire nails, base per keg.....	\$3.75
Cement coated nails, 100-lb. keg.....	3.75
Cement coated nails, count kegs.....	3.00

Warehouse Business.—With the approach of the Christmas holidays and inventory-taking, little buying of importance is being transacted. Buying is for immediate requirements only. Quotations are unchanged.

Rails.—The United Commercial Co., San Francisco, is low bidder on 1800 to 1900 tons of 70 to 80-lb. standard-section rails, on which bids were opened Nov. 22 by the Los Angeles County Flood Control District, Los Angeles.

Coke.—A local importer received a shipment of 4000 to 5000 tons of German coke during the past week, all of which had been sold long before it arrived at this port. Some local sellers have withdrawn quotations on coke for future delivery. Buyers, for the most part, are well covered on their early first quarter requirements. While some importers are quoting German by-product fuel at approximately \$15 per net ton at incoming dock, this figure is purely nominal, and it is doubtful if many sellers would be willing to take orders at that price.

Toronto

Mills Well Booked—Canadian National Places 27,000 Tons of Rails—Scrap Dull

TORONTO, ONT., Nov. 30.—The iron and steel industry of Canada has been showing steady improvement for the past two or three months. Iron and steel orders placed during the 11 months of this year greatly exceed those of a year ago, and at the present time Canadian mills report larger unfilled tonnages on their books than for several years past. Mill activities are very close to capacity, and orders on hand are sufficient to warrant the belief that present operations will continue until next spring, at least.

A recent statement from officials of the British Empire Steel Corporation, Sydney, N. S., is to the effect that there are now 2800 men employed by the Dominion Iron & Steel Co., which is the largest force to be employed by the Sydney works since 1923. The last of the 25,000-ton rail order for the Canadian Pacific Railway Co. will be rolled this week at Sydney. Upon the completion of the Canadian Pacific order the Sydney mill will commence rolling a 32,000-ton rail order for the Canadian National Railways. The British Empire Steel Corporation has received still another rail contract from the Canadian National Railways for 27,000 tons, making a total of 59,000 tons from that source. In addition to the rail business, orders for wire, nails, rods and various other lines have been coming in steadily and practically all departments are now operating nearly to capacity.

The Algoma Steel Corporation, Sault Ste. Marie, Ont., has also shared to a considerable extent in the rail business placed by the railroads and reports close to capacity operations in all its steel departments, although only two out of its four blast furnaces are blowing. The output from the two furnaces, however, is sufficient to supply the needs of the open-hearth department in basic iron, as well as the foundry and malleable iron that is made for sale.

The Steel Co. of Canada, Ltd., Hamilton, Ont., reports one of the best years since 1920. This company, making practically all lines of mill products, excluding rails, has been successful in keeping its mills running close to capacity throughout the greater part of the year. Orders for bars greatly exceed those of a year ago; in fact, the mills are now quoting delivery on bars at about four weeks in the future. The company is now erecting a \$300,000 addition to its works.

While there has been some improvement in foundry business of late, it has not been on anything like the scale that has featured new mill business. Although some foundries are running at around 80 per cent capacity, others are operating below 50 per cent, but taken as a whole foundry operations average about 60 per cent, or some 10 per cent better than for the corresponding season a year ago.

Old Material.—Scrap sales during the past week

have been confined to a few special lines, such as heavy melting steel, turnings, machinery cast and wrought scrap, and even for those grades individual orders are small. The bulk of current business continues to come from the Hamilton district, with only passing interest reported from consumers throughout the remainder of the Province. In the Montreal market, demand for old material is limited to small tonnages for the immediate needs of consumers. There is, however, some demand on export account, but even this business is beginning to fall off as a result of the approaching holiday season. Dealers' buying prices are firm, as follows:

	Toronto	Montreal
<i>Per Gross Ton</i>		
Steel turnings	\$8.50	\$8.00
Machine shop turnings.....	8.50	7.00
Wrought pipe	6.00	6.00
Rails	11.00	10.00
No. 1 wrought scrap.....	11.00	14.00
Heavy melting steel.....	11.00	9.00
Steel axles	16.00	17.00
Axles, wrought iron.....	18.00	19.00
Boiler plate	10.00	8.00
Heavy axle turnings.....	9.00	8.50
Cast borings	8.50	7.50
<i>Per Net Ton</i>		
Standard carwheels	15.00	16.00
Malleable scrap	14.00	14.00
Stove plate	10.00	13.00
No. 1 machinery cast.....	16.00	18.00

Buffalo

Pig Iron and Scrap Mark Time—Mills on 65 Per Cent Basis

BUFFALO, Nov. 30.—In the pig iron market the week passed quietly. Most melters have covered their requirements until April 1 and, in some cases, until July 1. Large inquiries are scarce. One order of 200 tons was taken, and several for 100 tons and for carloads were booked during the week. The seller that advanced prices to \$20 and \$21, base Buffalo, has not reduced them but is obtaining no business at the higher figures. The market is firm at \$19, Buffalo, for Eastern shipment and \$20 for Buffalo district shipment.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25..	\$19.00 to \$20.00
No. 2X foundry, sil. 2.25 to 2.75..	19.50 to 20.50
No. 1X foundry, sil. 2.75 to 3.25..	20.50 to 21.50
Malleable, sil. up to 2.25.....	20.00
Basic	19.00
Lake Superior charcoal.....	27.28

Old Material.—The market is standing still. There has been no new buying. There is very little outside demand, and all prices are nominal. Production of scrap has dropped off, and stocks on hand are light. Shipments are still being held up by one mill, but releases are scheduled for Dec. 1. There have been no sizable transactions in this market during the week.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel.....	\$15.50 to \$16.00
Selected No. 1 heavy melting steel	17.00 to 17.50
Low phosphorus	18.00 to 19.00
No. 1 railroad wrought.....	14.00 to 14.50
Carwheels	16.00 to 16.50
Machine shop turnings.....	10.50 to 10.75
Mixed borings and turnings.....	12.00 to 12.50
Cast iron borings.....	12.00 to 12.50
No. 1 busheling.....	15.50 to 16.00
Stove plate	14.50 to 14.75
Grate bars	12.00 to 13.00
Hand bundled sheets.....	10.50 to 11.50
Hydraulic compressed	15.50 to 16.00
No. 1 machinery cast.....	16.00 to 16.25
Railroad malleable	16.50 to 17.00
Iron axles	24.00 to 25.00
Steel axles	16.00 to 16.50
Drop forge flashings.....	13.00 to 13.50

Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes.....	3.40c.
Mild steel bars.....	3.30c.
Cold-finished shapes	4.45c.
Rounds	3.95c.
No. 24 black sheets.....	4.30c.
No. 10 blue annealed sheets.....	3.80c.
No. 21 galvanized sheets.....	5.15c.
Common wire nails, base per keg.....	\$3.90
Black wire, base per 100 lb.....	3.90

Finished Iron and Steel.—Mill operations average about 65 per cent of capacity, and business is only fair. Prices on bars and shapes are firm, and No. 24 black sheets range from 3c. to 3.10c., Pittsburgh. Elevators to be built for the Buffalo plant of the International Milling Co., Minneapolis, will require 400 to 500 tons of reinforcing bars. Bids will be taken this week on 100 tons of reinforcing bars for an incinerator for the city of Niagara Falls, N. Y. An addition to the Buffalo city hospital will require 2200 tons of structural steel and 300,000 sq. ft. of fabric mesh. Buffalo public school, No. 78, will require 250 tons of reinforcing bars. Bids will be taken for this Dec. 1. Bolt plants are operating at about 60 per cent. The slowing down of the automotive industry has adversely affected business in bolts.

Birmingham

Little Forward Buying of Pig Iron—Pipe Business Drops—Mills Active

BIRMINGHAM, Nov. 30.—Sales made and others in sight, appear to assure sustained production of pig iron through the remainder of the year. Deliveries are still in excess of output, and sales from week to week are heavier than shipments. Ten blast furnaces are making foundry iron, 12 are producing basic iron, and one is on a special grade. Surplus stocks of iron on blast furnace yards will take care of the excess of deliveries over production. Prices are firm at \$20, Birmingham, for No. 2 foundry. Various shops that melt iron will suspend operations during the holiday season. In some instances there will be a shutdown for a week. Others plan to close for two days only. Little business has been taken for 1927, although furnace books have been open for first quarter for more than two weeks. The policy of buying iron as needs come to view, and then only for two weeks ahead at the most, is becoming even more general. Furnace operating schedules will not be disturbed for some time. While one furnace is to be blown out, another will take its place. The Sloss-Sheffield Steel & Iron Co. will soon shut down one of its "city" furnaces to permit the transfer of machinery to the new furnace. The new stack will be ready for the torch before next May. This company has four blast furnaces in operation and expects to maintain that schedule indefinitely.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.....	\$20.00
No. 1 foundry, 2.25 to 2.75 sil.....	20.50
Basic	20.00
Charcoal, warm blast.....	30.00

Rolled Steel.—Several of the finishing mills, including those rolling rails and accessories, are running full, and shipments are still in good volume. Various fabricating works throughout this district are operating at a good rate, with future prospects bright. Mill prices on plates, shapes, bars and sheets are unchanged.

Coke.—With every by-product coke plant in the district in full operation and with independent producers fortified with contracts that still have several weeks to run, the strength of coke market is not to be questioned. Quotations still hover around \$5.50 per net ton, Birmingham, for foundry coke, with occasional sales of spot coke at \$6. Coal production in Alabama has reached a peak, with export orders taking up the excess over domestic demands. By-product coke plants, however, are being well supplied with coal.

Cast Iron Pipe.—No change has taken place in the pressure pipe market except that there are no longer any delays in deliveries on centrifugal pipe. There are few municipal lettings, and total bookings of pipe makers are declining. Shop operations, however, are well maintained, and it is expected that the winter pace of last year will be surpassed this year. Quotations are unchanged at \$39 to \$40, Birmingham, for 6-in. and larger sizes.

Old Material.—Shipments by dealers to consumers are in good volume, but prices are still weak. Plenty

of scrap is to be had, a fact known both to dealers and consumers. Consumers of heavy melting steel are taking steady deliveries on large quantities of material purchased some time ago but give no intimation as to when it will be necessary for them to re-enter the market.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical.....	\$15.00 to \$16.00
Heavy melting steel.....	13.00 to 14.00
Railroad wrought.....	11.00 to 12.00
Steel axles.....	17.00 to 18.00
Iron axles.....	17.00 to 18.00
Steel rails.....	13.00 to 14.00
No. 1 cast.....	16.00 to 17.00
Tramcar wheels.....	16.50 to 17.50
Carwheels.....	16.00 to 16.50
Stove plate.....	14.00 to 14.50
Machine shop turnings.....	8.00 to 8.50
Cast iron borings.....	8.00 to 8.50
Rails for rolling.....	15.00 to 16.00

Cincinnati

Pig Iron Sales at Low Point of Year— Foundry Coke Advances

CINCINNATI, Nov. 30.—Pig iron sales in the past week dropped to the lowest point this year. Consumers are manifesting little interest, and only a small tonnage of foundry iron for first quarter has been sold. Buyers are confident that prices are not likely to go higher in the near future and that there is a possibility that a downward trend may set in. Therefore, they are adhering to a waiting policy and are counting upon wearing producers down so that they will make concessions to obtain orders for 1927 delivery. Dealers are of the opinion that there will be considerable iron purchased before the first of the year, but whether the consumers or the furnaces will gain the price advantage is problematical, although the situation seems to favor the former. Southern Ohio foundry iron is holding at \$20, base furnace, but sales have been confined to a few scattered lots. Jackson County silvery iron is firm at \$28.50, base Jackson, for 8 per cent, with producers asking \$1 a ton more for first quarter delivery. Bookings of Southern iron have been light, and quotations remain at \$20, base Birmingham. The quietness of the market is reflected in the absence of important inquiries.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25	
(base).....	\$23.69
Alabama fdy., sil. 2.25 to 2.75...	24.19
Tennessee fdy., sil. 1.75 to 2.25...	23.69
Southern Ohio silvery, 8 per cent	30.39
So. Ohio fdy., sil. 1.75 to 2.25....	\$21.89 to 22.39
So. Ohio malleable.....	21.39

Finished Material.—Specifications and orders in November totaled 80 to 85 per cent of those in October, and a further recession is expected during the coming month. Consumers in all industries are keeping their stocks down to as low a point as possible. When they buy material they demand quick delivery, and it is almost impossible to interest them in first quarter tonnage. Sellers are not alarmed at the steady decline in business during the past few weeks, regarding it instead as a development to be expected in view of the

high rate of consumption throughout the first 10 months of the year. In fact, some producers are welcoming the opportunity to refrain from discussing 1927 contracts. So long as bookings are sustained at their present level mills are satisfied to allow conditions to remain undisturbed. Only in the sheet market have there been signs of price weakness. All other products are holding firm at previously established schedules. Bars are moving at a moderate rate at 2c., base Pittsburgh. Bookings of structural steel have tapered off, no sizable jobs having appeared in the past two weeks. Structural shapes and plates, however, are steady at 2c. and 1.90c., base Pittsburgh, respectively. Sales of galvanized sheets, notably in the lighter gages, have been below normal, and the necessity of obtaining orders has driven some independent mills to accepting \$2 less than the regular schedule of 3.95c., base Pittsburgh. Some shading in black sheets also is noted, with prices ranging from 3c. to 3.10c., base Pittsburgh. Blue annealed sheets have held well at 2.40c., base Pittsburgh. Sheet mills in this territory are reported to be operating from 70 to 75 per cent of capacity. The wire market is quiet. Common wire nails are selling at \$2.65 per keg, Ironton or Pittsburgh, and plain wire at \$2.50 per 100 lb., Ironton or Pittsburgh. Wire mills nearby are running at from 60 to 65 per cent.

Reinforcing Bars.—The Arnold Engineering Co., Chicago, has awarded 350 tons of bars for the plant of the John Van Range Co., Cincinnati, to the Pollak Steel Co. No important inquiries have come out in the past two weeks, and the only job of consequence now before the trade calls for about 1500 tons for an addition to the Union Central Building, Cincinnati. New billet bars nominally are quoted at 2c., base Pittsburgh, and rail steel bars, 1.90c., base mill.

Coke.—Makers of by-product foundry coke have advanced their prices for December to \$8 per net ton, f.o.b. ovens, or \$10.14, delivered Cincinnati. This represents an increase of 50c. a ton. By-product domestic coke will remain unchanged at \$5.50, ovens, for No. 2 nut and \$6 for egg and walnut. In Michigan, by-product foundry coke is firm at \$10.50, Detroit ovens, for outside shipments, and \$11.25 for delivery in Detroit. Prices of by-product domestic coke are undisturbed at \$8.50, Detroit ovens, for outside delivery, and \$9.25, delivered in Detroit. Shipments of by-product foundry coke in November showed a decline compared with those in October. While there have been no changes in the quotations on beehive coke, dealers freely admit that lower prices in the next few weeks are inevitable.

Based on freight rates of \$2.14 from Ashland, Ky., and \$2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Wise County foundry, \$8.09 to \$9.59; New River foundry, \$11.59; by-product foundry, \$10.14.

Old Material.—The market is sluggish. Consumers are unwilling to purchase material, because they have sufficient stock to meet present requirements and feel prices are not favorable for forward buying. On the other hand, dealers are reluctant to sell on the present basis. While quotations on all items are unchanged, there is a tendency toward weakness. The Big Four has a list of about 6500 tons closing this week.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton

Heavy melting steel.....	\$12.50 to \$13.00
Scrap rails for melting.....	12.50 to 13.00
Short rails.....	17.50 to 18.00
Relaying rails.....	26.50 to 27.00
Rails for rolling.....	14.00 to 14.50
Old carwheels.....	12.00 to 12.50
No. 1 locomotive tires.....	16.50 to 17.00
Railroad malleable.....	14.50 to 15.00
Agricultural malleable.....	13.50 to 14.00
Loose sheet clippings.....	7.00 to 7.50
Champion bundled sheets.....	8.50 to 9.00

Per Net Ton

Cast iron borings.....	7.50 to 8.00
Machine shop turnings.....	7.00 to 7.50
No. 1 machinery cast.....	17.00 to 18.00
No. 1 railroad cast.....	14.00 to 14.50
Iron axles.....	19.50 to 20.00
No. 1 railroad wrought.....	9.00 to 9.50
Pipes and flues.....	7.50 to 8.00
No. 1 bushelling.....	9.00 to 9.50
Mixed bushelling.....	6.50 to 6.00
Burnt cast.....	6.50 to 7.00
Stove plate.....	9.00 to 9.50
Brake shoes.....	9.50 to 10.00

Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes.....	3.40c.
Bars, mild steel or iron.....	3.30c.
Reinforcing bars.....	3.30c.
Hoops.....	4.00c. to 4.25c.
Bands.....	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares.....	4.35c.
Open-hearth spring steel.....	4.75c. to 5.00c.
No. 24 black sheets.....	4.05c.
No. 10 blue annealed sheets.....	3.60c.
No. 24 galvanized sheets.....	4.90c.
Structural rivets.....	3.75c.
Small rivets.....	.65 per cent off list
No. 9 annealed wire, per 100 lb.....	\$3.00
Common wire nails, base per keg.....	2.95
Cement coated nails, base per 100-lb. keg..	3.15
Chain, per 100 lb.....	7.55
	Net per 100 Ft.
Lap welded steel boiler tubes, 2-in.....	\$18.00
4-in.....	38.00
Seamless steel boiler tubes, 2-in.....	19.00
4-in.....	39.00

Boston

Trend of Pig Iron Prices Mixed, with Advantage on Melters' Side

BOSTON, Nov. 30.—The last day of the month finds the trend of pig iron prices mixed, with an advantage on the melters' side. The lowest price quoted on Virginia iron today is \$22.50 a ton, base furnace. The highest, on piled iron, is \$24. Alabama furnaces, on first quarter business, are quoting \$20 a ton, base Birmingham, the same price as for the current quarter. Buffalo iron for the first half is available at \$18.75 to \$19, base furnace, and possibly less, while furnaces east of Buffalo are meeting \$18.75, base Buffalo, and presumably would quote less on a large tonnage. Western Pennsylvania iron is quoted on a delivered base equivalent to \$19, Buffalo. Eastern Pennsylvania iron, which did not participate in the recent buying movement to any appreciable extent, is a shade easier in price. Demand for iron is almost nil, however. Melters are awaiting price and business developments, at the same time taking iron on old contracts per schedule or in anticipation of schedule. Two heater makers, however, having previously bought foreign high phosphorus iron, are holding up deliveries of domestic iron running from medium to high in phosphorus. In connection with freight rates from Buffalo to New England points it may be said that the Boston & Maine Railroad some time ago modified its rates from Troy, N. Y., to certain New England points 15c. to 75c. a ton. To certain points, Worcester, Mass., for illustration, no change in rates was made. A majority of rates were lowered however, which made it possible for Buffalo furnaces to ship to Troy on the local rate and then to reship on the local rate from Troy to New England at a lower combined rate than \$4.91, the original through rate from Buffalo to New England. To meet this situation it became necessary for the Boston & Albany Railroad to raise the rate from Buffalo to Troy or reduce the rate from Buffalo to New England. It has under consideration a reduction in rates from Buffalo to New England, which will equalize the combined local rates from Buffalo to Troy and Troy to New England. The Boston & Albany Railroad, however, has not issued its new rates, and there have been no new rates made by the Boston & Maine Railroad since those aforementioned.

We quote delivered prices per gross ton to most New England points as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$6.91 to \$8.77 from Alabama:

East. Penn., sil. 1.75 to 2.25	\$25.65 to \$26.15
East. Penn., sil. 2.25 to 2.75	26.15 to 26.65
Buffalo, sil. 1.75 to 2.25	23.41 to 23.91
Buffalo, sil. 2.25 to 2.75	23.41 to 24.41
Virginia, sil. 1.75 to 2.25	28.42 to 29.92
Virginia, sil. 2.25 to 2.75	28.92 to 30.42
Alabama, sil. 1.75 to 2.25	26.91 to 28.77
Alabama, sil. 2.25 to 2.75	27.41 to 29.27

Sheets.—Sheet mills have not had much success in this territory in rounding up first quarter business at \$3.95 per 100 lb., base Pittsburgh, for galvanized, at

\$3.10, base, for one-pass cold-rolled, and at \$2.40, base, for blue annealed. Consumers in need of material prefer to specify against last quarter contracts or to supply or anticipate needs at the current quarter prices, which are somewhat lower.

Cast Iron Pipe.—Manchester, N. H., closed bids Dec. 1 on 400 tons of 6 to 30-in. pipe for winter delivery. This will be the first New England municipal letting for 1927 delivery. Prices on domestic pipe are easier, owing to keen competition for business. Those quoted openly are: 4-in., \$59.10 a ton, delivered common Boston freight rate points; 6 to 12-in., \$54.10 to \$55.10; larger pipe, \$52.10 to \$54.10. The usual \$5 differential is asked on Class A and gas pipe.

Coke.—Both the New England Coal & Coke Co. and the Providence Gas Co. announce that their price on by-product foundry coke this month will be \$13 a ton, delivered, within a \$3.10 freight rate zone. This price is the same as for November. As a result of developments in the foreign coal strike situation, the demand for foundry coke has fallen off materially. Mild weather has materially cut down the demand for domestic coke, and shipments of all kinds of fuel from New England ovens are much less than a year ago.

Old Material.—The past week developed no new business of importance from consumers, dealers or metal-working plants. Prices remain virtually as they were a week ago. Current activity is confined largely to the sale of an occasional carlot of heavy melting steel and turnings, borings, mixed borings and turnings, skeleton and forged material, or miscellaneous scrap. There is no inkling when active buying of scrap will start again.

The following prices are for gross-ton lots, delivered at consuming points:

Textile cast	\$18.50 to \$19.00
No. 1 machinery cast	18.00 to 18.50
No. 2 machinery cast	16.50 to 17.00
Stove plate	14.00 to 14.50
Railroad malleable	19.50 to 20.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	\$10.50 to \$11.00
No. 1 railroad wrought	11.50 to 12.00
No. 1 yard wrought	10.50 to 11.00
Wrought pipe (1 in. in diameter, over 2 ft. long)	9.00 to 9.50
Machine shop turnings	8.00 to 8.50
Cast iron borings, chemical	10.50 to 11.00
Cast iron borings, rolling mill	8.00 to 8.50
Blast furnace borings and turnings	8.00 to 8.50
Forge scrap	8.50 to 9.00
Bundled skeleton, long	8.00 to 8.50
Forged flashings	8.50 to 9.00
Bundled cotton ties, long	8.00 to 8.50
Bundled cotton ties, short	8.50 to 9.00
Shafting	16.00 to 16.50
Street car axles	17.50 to 18.50
Rolls for rerolling	11.50 to 12.00
Scrap rails	10.50 to 11.00

Detroit Scrap Prices Unchanged, with Melt at Low Point of Year

DETROIT, Nov. 30.—The melt in the district is at present on the lowest basis for the year, and there is a possibility that December will show some slight increases. Several of the largest automobile plants have already taken inventories and are gaging their December production on a slightly increasing scale. Scrap prices are unchanged.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate. No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	\$12.50 to \$13.00
Borings and short turnings	9.00 to 9.50
Long turnings	8.00 to 8.50
No. 1 machinery cast	17.00 to 18.00
Automobile cast	20.50 to 21.50
Hydraulic compressed	11.75 to 12.25
Stove plate	12.50 to 14.50
No. 1 busheling	11.00 to 11.50
Sheet clippings	7.75 to 8.25
Flashings	10.75 to 11.25

The Air Reduction Co., Inc., 342 Madison Avenue, New York, has purchased a part of the stock of the Commercial Acetylene Supply Co., Inc., Los Angeles and Berkeley, Cal., but the control of the latter company has not been changed and its management will continue as heretofore.

Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes	3.265c.
Flats, hot-rolled	4.15c.
Reinforcing bars	3.265c. to 3.54c.
Iron bars—	
Refined	3.265c.
Best refined	4.60c.
Norway, rounds	6.60c.
Norway, squares and flats	7.10c.
Structural shapes—	
Angles and beams	3.365c.
Tees	3.365c.
Zees	3.465c.
Plates	3.365c.
Spring steel—	
Open-hearth	5.00c. to 10.00c.
Crucible	12.00c.
Tire steel	4.50c. to 4.75c.
Bands	4.015c. to 5.00c.
Hoop steel	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hexagons	4.05c.
Squares and flats	4.55c.
Toe calk steel	6.00c.

St. Louis

Buying from Mill Slackens with Approach of Inventories—Scrap Stocks Large

ST. LOUIS, Nov. 30.—As was the case last week, pig iron buying in the St. Louis industrial district is light, in marked contrast with the heavy purchases early in November and late in October. Sales by the St. Louis Coke & Iron Corporation for the week totaled 4500 tons, including 1000 tons of basic to a St. Louis district melter and 1000 tons of malleable to an Illinois plant, both for first quarter delivery. A specialty maker has bought 200 tons of Southern iron for first quarter delivery. The only notable inquiry before the market is one for 2500 tons of high silicon, high phosphorus iron from an Iowa specialty foundry. Generally melters are taking iron according to contract schedules, and the melt is said to be holding up fairly well. Prices are unchanged.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25...	\$22.16
Northern malleable, sil. 1.75 to 2.25	22.16
Basic	22.16
Southern fdy., sil. 1.75 to 2.25...	24.42
Granite City iron, sil. 1.75 to 2.25	\$22.31 to 22.81

Old Material.—There is hardly any life in the market. There is a little trading among dealers, and consumers are willing to buy a car of steel grades now and then if the price is "right." As a matter of fact, stocks in yards of consumers in the district are generally very large, and one leading factor has the biggest stock in its history. To add to the weakness of the market, orders for the finished products of consumers are light. Railroad lists include: Pennsylvania System, 34,000 tons; Big Four, 6300 tons; Chicago, Burlington & Quincy, 3700 tons; New York Central, 3500 tons (relaying rails); Union Pacific, 3000 tons; Louisville & Nashville, 2000 tons (relaying rails); Mobile & Ohio, 1100 tons; and New Orleans Great Northern, 115 tons. Prices are unchanged.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails	\$10.50 to \$11.00
Rails for rolling	15.25 to 15.75
Steel rails less than 3 ft.	16.50 to 17.00
Relaying rails, 60 lb. and under	20.50 to 23.50
Relaying rails, 70 lb. and over	26.50 to 29.00
Cast iron carwheels	15.25 to 15.75
Heavy melting steel	13.00 to 13.50
Heavy shoveling steel	13.00 to 13.50
Frogs, switches and guards cut apart	14.00 to 14.50
Railroad springs	16.75 to 17.25
Heavy axle and tire turnings	10.50 to 11.00
No. 1 locomotive tires	16.00 to 16.50
Per Net Ton	
Steel angle bars	12.50 to 13.00
Steel car axles	17.50 to 18.00
Iron car axles	20.00 to 20.50
Wrought iron bars and transoms	18.00 to 18.50
No. 1 railroad wrought	11.75 to 12.25
No. 2 railroad wrought	11.50 to 12.00
Cast iron borings	9.00 to 9.50
No. 1 busheling	10.00 to 10.50
No. 1 railroad cast	14.50 to 15.00
No. 1 machinery cast	16.50 to 17.00
Railroad malleable	12.25 to 12.50
Machine shop turnings	6.50 to 7.00
Bundled sheets	7.50 to 8.00

Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes	3.25c.
Bars, mild steel or iron	3.15c.
Cold-finished rounds, shafting and screw stock	3.75c.
No. 24 black sheets	4.45c.
No. 10 blue annealed sheets	3.60c.
No. 24 galvanized sheets	5.25c.
Black corrugated sheets	4.65c.
Galvanized corrugated sheets	5.30c.
Structural rivets	3.65c.
Boiler rivets	3.85c.
Per Cent Off List	
Tank rivets, $\frac{7}{8}$ -in. and smaller	.70
Machine bolts	.50 and 5
Carriage bolts	.47½
Lag screws	.55 and 5
Hot-pressed nuts, square, blank or tapped	3.25c. off per lb.
Hot-pressed nuts, hexagons, blank or tapped	3.75c. off per lb.

Coke.—The demand both for foundry and domestic grades of coke continues heavy. The by-product ovens in the district are well sold, the Granite City producer being virtually out of the market except on chestnut sizes for the next six months. Consumers are pressing for shipments against contracts.

Finished Iron and Steel.—Buying from mills has slowed down considerably, since consumers desire to await the taking of inventories before making any purchases for first quarter. Warehouse business was good during the week, considering that trade was broken by a holiday, and for the month is expected to show a good gain compared with last month and November last year. Most fabricators of structural steel are pressing for business, but a number of large building projects are in the offing.

REINFORCING STEEL

Awards Total 3150 Tons With Nearly 1800 Tons Up for Bids

Awards of concrete reinforcing bars, as reported to THE IRON AGE during the last week, amounted to 3150 tons, the largest of which was 750 tons for a continuation school in Milwaukee. New projects up for inquiry totaled less than 1800 tons. Awards follow:

- BROOKLYN, 500 tons, factory building, American Can Co., to Jones & Laughlin Steel Corporation; previously reported as taking 200 tons.
- MINNEOLA, L. I., 100 tons, high school, to Joseph T. Ryerson & Son, Inc.
- CINCINNATI, 350 tons, building for John Van Range Co., to Pollak Steel Co.
- CHICAGO, 125 tons of rail steel, apartment building at 1135 Pratt Boulevard, to Calumet Steel Co.
- CHICAGO, 100 tons of rail steel, apartment building at 5746 Kenwood Avenue, to Calumet Steel Co.
- CHICAGO, 100 tons of rail steel, Holmes Apartment, to Olney J. Dean & Co.
- CHICAGO, 350 tons of rail steel, apartment building, at Pratt Boulevard and Lakewood Avenue, to Inland Steel Co.
- MILWAUKEE, 750 tons, continuation school, to American System of Reinforcing.
- STICKNEY, ILL., 3750 tons, for Sanitary District sewage treating plant, to American System of Reinforcing.
- HOLMESBURG, PA., 75 tons (original inquiry 105 tons), House of Correction, to McClintic-Marshall Co.
- PHILADELPHIA, 450 tons, building for Sears, Roebuck & Co., to Davis Brothers.
- SAN FRANCISCO, 200 tons, for unnamed interests, to an unnamed San Francisco jobber.
- OAKLAND, CAL., 150 tons, warehouse for the Peck & Hills Furniture Co., to Frederick Steel Co., Oakland.
- BERKELEY, CAL., 100 tons, addition to the J. F. Hink & Son department store, to an unnamed jobber.

Inquiries for reinforcing steel bars include the following:

- CHICAGO, tonnage being estimated, office building at Wells and Van Buren Streets; David Saul Klaster, architect.
- CHICAGO, 100 tons, North-Town Bank; Oldefest & Williams, architects.
- CHICAGO, tonnage being estimated, Woodlawn Theater; C. Howard Crane, architect.
- CHICAGO, 200 tons, Edgewater Towers Apartment; McMally & Quinn, architects.
- WILMINGTON, DEL., 230 tons, building for Frank J. Darling.
- GREEN LANE, PA., 250 tons, bridge over Schuylkill River.
- PHILADELPHIA, 100 tons, building for Laurel Soap Co.
- PHILADELPHIA, 270 tons, Jewish hospital.
- PHILADELPHIA, 150 tons, garage for Motor Service Co.
- CLEVELAND, 100 tons, Laurel School.
- SAN JOSE, CAL., 125 tons, Medical Building, Sixth and Santa Clara Streets.
- SAN FRANCISCO, 150 tons, Sherman School; bids Dec. 22.
- SAN FRANCISCO, 100 tons, dance hall, Market Street and Van Ness Avenue.

Dimensional changes on hardening, artificial aging, and wear tests will be discussed at a meeting of the gage steel committee, to be held Monday morning, Dec. 6, at the Engineering Societies Building, New York. H. W. Bearce, Bureau of Standards, Washington, is secretary of the committee.

FABRICATED STRUCTURAL STEEL

New Projects Total 50,500 Tons—Awards Below Average of Recent Weeks

More than 50,500 tons of fabricated structural steel are involved in pending jobs, the largest of which are a bank building in Chicago, requiring 12,000 tons, and bridge work on the Chesapeake & Ohio and Hocking Valley railroads which will take 10,000 tons. Lettings during the week amounted to only 18,600 tons. Awards follow:

BOSTON, 320 tons, Codman Street bridge, to Boston Bridge Works.
 NEW YORK, 1600 tons, apartment building, 208 West Twenty-third Street, to Easton Structural Steel Co.
 NEW YORK, 750 tons, 15-story apartment building, Seventy-Ninth Street and Amsterdam Avenue, to Taylor-Fichter Steel Construction Co.
 NEW YORK, 390 tons, apartment building, 165th Street and University Avenue, to Prudential Iron Works.
 NEW YORK, 300 tons, apartment building, 174th Street and Fulton Avenue, to Mott Haven Iron Works.
 NEW YORK, 100 tons, theater, Tremont Avenue and Boston Post Road, to Offner Iron Works.
 NEW YORK, 450 tons, club house on West Eighty-fifth Street for United Order of True Sisters, to A. E. Norton, Inc.
 NEW YORK, 1450 tons, apartment building at 1016 Fifth Avenue, to A. E. Norton, Inc.
 NEW YORK, 700 tons, apartment building on East Sixty-fourth Street, to Hedden Iron Construction Co.
 BOSTON, 1800 tons, bridges for Cottage Farm, to Phoenix Bridge Co.
 NEWARK, N. J., 2200 tons, contract No. 4 on viaduct, to McClintic-Marshall Co.
 JERSEY CITY, N. J., 600 tons, Erie Railroad bridge, to McClintic-Marshall Co.
 WESTBURY, L. I., 100 tons, theater, to Elby Structural Steel Co.
 BALTIMORE, 2300 tons, municipal building, to McClintic-Marshall Co.
 ROCHESTER, PA., 850 tons, Guaranteed Liquid Measure Co., building, to Pittsburgh Bridge & Iron Co.
 CANTON, OHIO, 100 tons, armory, to Guibert Steel Co.
 TOLEDO, OHIO, 500 tons, Southern Wheel Co. plant, to American Bridge Co.
 STONE, KY., 150 tons, machine shop for Fordson Coal Co., to Fairmont Mining Machinery Co., Fairmont, Va.
 FORT WAYNE, IND., 160 tons, Chamber of Commerce Building, to unknown bidder.
 KELLE, MICH., 140 tons, Northern Electric Co. power house superstructure, to Worden Allen Co., Milwaukee.
 ROCK ISLAND, ILL., 500 tons, bridge work, to American Bridge Co.
 AURORA, ILL., 1200 tons, Illinois Hotel, to McClintic-Marshall Co.
 MILWAUKEE, 175 tons, Randco Apartment, to Milwaukee Structural Steel Co.
 NORTH PLATTE, NEB., 770 tons, plate girder spans for the Union Pacific, to McClintic-Marshall Co.
 RUTH, NEV., 300 tons, plant addition for the Nevada Consolidated Copper Co., to Kansas City Structural Steel Co.
 OAKLAND, CAL., 100 tons, gymnasium for the University High School, to Herrick Iron Works, Oakland.
 BURLINGAME, CAL., 200 tons, Masonic Temple, to California Steel Co., San Francisco.
 LOS ANGELES, 228 tons, one 55,000-bbl. steel tank, for the Water and Power Commission, to Lacy Mfg. Co.
 FAIRBANKS, ALASKA, 180 tons, power house, to Hofius Steel & Equipment Co., Seattle.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

NEW HAVEN, CONN., 1200 tons, New Haven Trust Co. building.
 NEW YORK, 1000 tons, garage on Cortlandt Street.
 NEW YORK, 600 tons, power station; bids being taken by Sanderson & Porter, engineers.
 NEW YORK, 2500 tons, Hotel Lincoln, Eighth Avenue and Forty-fourth Street.
 NEW YORK, 1000 tons, New York State Hospital on Riverside Drive.
 CHESAPEAKE & OHIO AND HOCKING VALLEY RAILROADS, 10,000 tons, bridge work.
 BUFFALO, 2200 tons, City Hospital buildings; bids taken.
 PHILADELPHIA, 3800 tons including 1400 tons of plates, office building for Philadelphia Electric Co.
 PASSAIC, N. J., 400 tons, highway bridge over Passaic River.
 PHILADELPHIA, 800 tons, bridge for Pennsylvania Railroad.
 ATLANTIC CITY, N. J., 500 tons, highway bridge.

CHICAGO, 12,000 tons, building for the State Bank of Chicago.
 CHICAGO, 200 tons, sales and service building for the International Harvester Co.
 CHICAGO, 1400 tons, apartment building on Lakeview Avenue.
 CHICAGO, tonnage not stated, theater and office building at 23 West Monroe Street.
 NORTHERN PACIFIC, 500 tons, deck girder spans.
 CEDAR RAPIDS, IOWA, 500 tons, City Hall.
 MADISON, WIS., 800 tons, post office.
 MINNESOTA, 1000 tons, seven highway bridges.
 TWIN FALLS, IDAHO, 3100 tons, highway bridge.
 BROWNSVILLE, TEX., 400 tons, bridge across the Rio Grande.
 BLYTHE RIVER, COLO., 1000 tons, bridge across the Blythe River; bids in.
 SANTA BARBARA, CAL., 800 tons, Biltmore Hotel.
 VENTURA, CAL., 100 tons, Masonic Temple.
 LOS ANGELES, 800 tons, California Club, Hope Street.
 LOS ANGELES, 500 tons, Catholic church on Sunset Boulevard.
 LOS ANGELES, 100 tons, lightning towers for the California Petroleum Corporation.
 LOS ANGELES, 200 tons, theater, Eighth Street and Broadway; Minneapolis Steel & Machinery Co., low bidder.
 SAN DIEGO, CAL., 1400 tons, Trust & Savings Building, Virginia Bridge & Iron Co., low bidder.
 SAN FRANCISCO, 150 tons, apartment building on Franklin Street.
 SAN FRANCISCO, 100 tons, apartment building on O'Farrell Street.
 OAKLAND, CAL., 550 tons, pipe line for the East Bay Municipal Utility District; bids being taken.
 RICHMOND, CAL., tonnage unstated, buildings for the Santa Fe Railroad.
 SNAKE RIVER, WASH., 950 tons, bridge across Snake River.

RAILROAD EQUIPMENT

Norfolk & Western Inquires for 2000 Cars—Locomotive Buying Below Previous Weeks

Locomotives ordered during the week totaled 22, with no new inquiries. The Baltimore & Ohio placed 20 locomotives with the Baldwin Locomotive Works. The Norfolk & Western has inquired for 2000 all-steel hopper-gondola cars. Purchases of cars have been confined to small lots, the outstanding order having been for 300 tank cars which was placed by the American Car Corporation with the Bethlehem Steel Corporation. Details of the week's business are given below.

Class I railroads of this country during the first 10 months this year installed 1839 locomotives, according to the car service division of the American Railway Association. This was an increase of 347 over the number installed during the corresponding period last year. Of the total number installed so far this year, 175 were placed in service in October. Locomotives on order on Nov. 1 totaled 334, compared with 218 on the same date last year.

Freight cars installed in service the first 10 months this year totaled 93,979, a decrease of 25,264 under the corresponding period in 1925. Freight cars installed in October this year totaled 8596. Class I railroads on Nov. 1 had 14,646 freight cars on order compared with 24,606 on the same date in 1925.

The Norfolk & Western has inquired for 2000 all-steel hopper-gondola cars of 70 tons capacity. This road is building 250 all-steel box cars and 25 caboose cars in its own shops.

The Western Maryland has ordered 500 hopper car bodies from the Bethlehem Steel Corporation and will repair 1000 hopper cars in its own shops.

The North American Car Co. has ordered 300 tank cars from the Bethlehem Steel Corporation.

The Chicago & North Western has placed 3 baggage cars with the American Car & Foundry Co. and is in the market for 25 caboose underframes.

The Chicago & Eastern Illinois will rebuild 300 freight cars in its own shops. The 2000 tons of material required has been placed with five car builders.

The Mining Equipment Co., 1414 Union Bank Building, Huntington, W. Va., is inquiring for two 20-ton industrial locomotives, 42-in. gage, Shay or Climax types preferred.

The Louisiana & Arkansas has purchased 2 locomotives from the Baldwin Locomotive Works.

The Union Pacific has awarded 10 dining cars and 8 observation cars to the Pullman Car & Mfg. Corporation, 10 baggage cars to the Standard Steel Car Co., 2 baggage mail cars to the American Car & Foundry Co., and 5 horse baggage cars to the Bethlehem Steel Co.

The Baltimore & Ohio has placed 20 locomotives with the Baldwin Locomotive Works.

NON-FERROUS METAL MARKETS

The Week's Prices		Nov. 30	Nov. 29	Nov. 27	Nov. 26	Nov. 24
	Lake copper, New York....	13.87½	13.87½	13.87½	13.87½	13.87½
	Electrolytic copper, N. Y....	13.37½	13.40	13.45	13.47½	13.50
	Straits tin, spot, New York.	71.75	72.25	....	71.62½	71.50
	Lead, New York.....	8.00	8.00	8.00	8.00	8.00
	Lead, St. Louis.....	7.80	7.80	7.80	7.80	7.80
	Zinc, New York.....	7.50	7.52½	7.52½	7.52½	7.52½
	Zinc, St. Louis.....	7.15	7.17½	7.17½	7.17½	7.17½

Cents per Pound
for
Early Delivery

*Refinery quotation; delivered price ¼c. higher.

NEW YORK, Nov. 30.—Weakness continues in copper and prices are falling. Buying of tin is active, with prices still high. The lead market is still quiet and firm. Demand for zinc is light and prices are easy.

Copper.—It is generally estimated that consumers of copper must still buy considerable for December consumption, but they are watching the situation closely and are withholding purchases as long as there seems any chance of getting the metal at bargain prices. This seems to be the key to the entire market. For some weeks there have been here and there enough producers desirous of selling copper who have been willing to make it advantageous for the consumer to buy. Under such conditions prices have receded again this week and today electrolytic copper is available at the lowest price in many months. There were sellers today (Tuesday) at 13.62½c., delivered, in the Connecticut Valley. Another feature of the weaker market was the reduction today of the official price of Copper Exporters, Inc., from 14.12½c. to 13.95c., c.i.f. Hamburg. Lake copper is lower in sympathy with the other market and is quoted at 13.75c. to 13.87½c., delivered.

Copper Averages.—The average price of Lake copper for the month of November, based on daily quotations in THE IRON AGE, was 13.99c., New York, against 14.26c. for October. The average price of electrolytic copper was 13.59c., refinery, or 13.84c., delivered, against 13.88c. delivered for October.

Metals from New York Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	73.00c. to 73.50c.
Tin, bar	73.00c. to 73.50c.
Copper, Lake	15.00c.
Copper, electrolytic	14.75c.
Copper, casting	14.25c.
Zinc, slab	8.00c. to 8.50c.
Lead, American pig.....	8.75c. to 9.25c.
Lead, bar	11.25c. to 12.25c.
Antimony, Asiatic	14.50c. to 15.50c.
Aluminum, No. 1 ingot for remelting (guaranteed over 99 per cent pure).....	30.00c. to 30.50c.
Babbitt metal, commercial grade.....	30.00c. to 40.00c.
Solder, ½ and ⅓	44.00c. to 45.00c.

Metals from Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig.....	77.25c.
Tin, bar	79.25c.
Copper, Lake	14.75c.
Copper, electrolytic	14.75c.
Copper, casting	14.25c.
Zinc, slab	8.50c.
Lead, American pig.....	8.75c.
Antimony, Asiatic	18.50c.
Lead, bar	10.75c.
Babbitt metal, medium grade.....	21.75c.
Babbitt metal, high grade.....	22.25c.
Solder, ½ and ⅓	44.75c.

Rolled Metals from New York or Cleveland Warehouse

Delivered Prices, Base per Lb.

Sheets—	
High brass	18.87½c. to 19.87½c.
Copper, hot rolled.....	22.50c. to 23.50c.
Copper, cold rolled, 14 oz. and heavier,	24.75c. to 25.75c.
Seamless Tubes—	
Brass	23.75c. to 24.75c.
Copper	24.50c. to 25.50c.
Braced Brass Tubes.....	26.87½c. to 27.87½c.
Brass Rods	16.62½c. to 17.62½c.

From New York Warehouse

Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks.....	13.00c. to 13.25c.
Zinc sheets, open	13.50c. to 13.75c.

Tin.—The Straits tin market has experienced another active week. It is estimated that 1300 to 1400 tons was sold during the week ended Nov. 27. The preponderance of demand was for November-December delivery with dealers the heaviest buyers. Consumers, however, were quite active in purchasing. Some of the buying by dealers was short covering, but it is stated that very little metal for January delivery and beyond was sold. On Saturday about 200 tons changed hands and yesterday, Monday, about 150 tons was sold. Today the market was very quiet, with spot Straits tin quoted at 71.75c., New York. In London yesterday there was a sharp advance of over £4 per ton in both spot standard and spot Straits tin, with the belief prevalent that the shorts were being squeezed. Today, however, there was a reaction there of about £3 per ton, with spot standard quoted at £317, future standard at £300 15s. and spot Straits £326 10s., all still considerably higher than a week ago. The Singapore market today was £311. Deliveries into consumption for November are reported at 6140 tons with 2304 tons reported in stock and landing.

Lead.—Buying of lead has abated and the market is quieter although prices continue firm. The American Smelting & Refining Co. still quotes 8c., New York, as its contract price while the outside market stands at 7.80c., St. Louis.

Zinc.—There have been no features and the market has been exceedingly quiet. Prime Western zinc for spot and early delivery is quoted today at 7.15c., St. Louis, or 7.50c., New York. Galvanizers have not been so active as formerly and while there has been some business reported it has not been large.

Antimony.—With the prospect of a strike in Hankow and Shanghai deliveries of Chinese metal may be curtailed. Little change in prices has yet appeared here

Non-Ferrous Rolled Products

Mill prices on bronze, brass and copper products were reduced ¼c. on Nov. 25. Lead full sheets are still being quoted at the reduction of Nov. 4, and zinc sheets have not changed since July 20.

On Copper and Brass Products, Freight up to 75c. Per 100 Lb. Allowed on Shipments of 500 Lb. or Over

Sheets—

High brass	18.62½c.
Copper, hot rolled.....	22.25c.
Zinc	11.75c.
Lead (full sheets).....	11.75c. to 12.00c.

Seamless Tubes—

High brass	23.50c.
Copper	24.25c.

Rods—

High brass	16.37½c.
Naval brass	19.12½c.

Wire—

Copper	15.62½c.
High brass	19.12½c.
Copper in Rolls.....	21.12½c.
Braced Brass Tubing.....	26.62½c.

Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 0 to 10 gage, 3 to 30 in. wide....	37.50c.
Tubes, base	48.00c.
Machine rods	34.00c.

Rolled Metals, f.o.b. Chicago Warehouse (Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—	Base per Lb.
High brass	18½c.
Copper, hot rolled	22.25c.
Copper, cold rolled, 14 oz. and heavier	24.50c.
Zinc	12.25c.
Lead, wide	11.25c.
Seamless Tubes—	
Brass	23.50c.
Copper	24.25c.
Brased Brass Tubes	26½c.
Brass Rods	16¾c.

with spot and future metal quoted at 14c., New York, duty paid.

Nickel.—Wholesale lots of ingot nickel are quoted unchanged at 35c. with spot nickel at 36c. and electrolytic nickel at 39c. per lb.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 27c. per lb., delivered.

Non-Ferrous Metals at Chicago

Nov. 30.—The price of copper is lower because of the influence of foreign markets. Tin and antimony have advanced and the price of zinc is off. The old metal market is quiet and prices are nominal.

We quote, in carload lots: Lake copper, 14c.; tin, 73c.; lead, 7.90c.; zinc, 7.25c.; in less than carload lots, antimony, 15c. On old metals we quote copper wire, crucible shapes and copper clips, 10.75c.; copper bottoms, 9.50c.; red brass, 9.25c.; yellow brass, 7.50c.; lead pipe, 6.75c.; zinc, 4.75c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 16.75c.; all being dealers' prices for less than carload lots.

Steel Making Operations Decline at Youngstown

YOUNGSTOWN, Nov. 30.—Declining operations in the Mahoning Valley indicate the extent of the curtailment in new buying of primary steels, and schedules show an average production rate of 65 per cent, against 70 per cent for the preceding week. The Carnegie Steel Co. has banked No. 4 blast furnace in its Ohio Works group, leaving four of six stacks in this complement in action. The Youngstown Sheet & Tube Co. plans to blow out Grace stack in its Brier Hill group, while the Republic Iron & Steel Co. is planning to bank a furnace in its Haselton complement, for needed repairs.

Of 127 Valley sheet mills, 72 are scheduled, against 98 the previous week, and 31 of 53 independent open-hearth furnaces, the same as the week before. The Carnegie company has reduced bar mill operations to 65 per cent, while with the independents such units are active around 25 to 30 per cent. The Newton Steel Co. and the Waddell Steel Co. suspend for the week to permit orders to accumulate. Fabricators are slowing down, the General Fireproofing Co. averaging 80 per cent and the Truscon Steel Co. 75 per cent.

The Sheet & Tube company has converted the smaller of two plate mills at its Brier Hill plant into a continuous jobbing mill, capable of rolling sheets as light as No. 14 gage. Most of this tonnage will be absorbed by the Youngstown Steel Door Co., manufacturing steel doors for railroad freight cars, whose product is for the present fabricated for the parent company by the Midland Products Co., Cleveland.

Steel Furniture Shipments Higher

WASHINGTON, Nov. 29.—Shipments of steel furniture stock goods in October, according to reports received by the Department of Commerce from 33 manufacturers in the "business group," were valued at \$2,670,499, compared with \$2,419,554 in September. October shipments of shelving, according to reports from 16 companies, were valued at \$595,906, against \$707,893 in September. Unfilled orders in the "business group" at the end of October were valued at \$1,685,545, while in shelving furniture the similar orders were valued at \$745,364.

Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible	11.00c.	12.75c.
Copper, heavy and wire	10.75c.	11.75c.
Copper, light and bottoms	9.00c.	10.50c.
Brass, heavy	6.75c.	8.25c.
Brass, light	6.00c.	7.50c.
Heavy machine composition	8.50c.	10.00c.
No. 1 yellow brass turnings	8.25c.	8.87½c.
No. 1 red brass or composition turnings	8.00c.	9.00c.
Lead, heavy	6.50c.	7.00c.
Lead, tea	4.75c.	5.50c.
Zinc	4.25c.	4.75c.
Sheet aluminum	16.50c.	18.50c.
Cast aluminum	16.50c.	18.50c.

Youngstown District Plant Improvements

James A. Campbell, president Youngstown Sheet & Tube Co., Youngstown, Ohio, has announced that the Youngstown Steel Door Co. will probably erect a plant next year in the Youngstown district. It is now operating on a contract arrangement with a Cleveland fabricator, steel being supplied by the Sheet & Tube company. The latter company has converted its small plate mill at the Brier Hill works into a continuous jobbing mill, rolling as light as 14-gage material, and this mill will supply much of the steel for the Youngstown Steel Door Co.

The Youngstown Sheet & Tube Co. will also expend next year \$225,000 in improving its Western Reserve property, installing annealing and shearing capacity. The company will concentrate production of blue annealed sheets at this plant, located in Warren, Ohio.

Rate Increases on Brass and Copper Products Cancelled

WASHINGTON, Nov. 30.—The Interstate Commerce Commission has ordered the railroads to cancel proposed increased rates on brass, bronze and copper products in Official Classification territory published in purported compliance with a finding of the commission in a previous decision concerning rates on these products. The majority held that the rates were not justified, and as a result the suspended schedules were ordered canceled without prejudice to the filing of the new schedules in accordance with the commission's findings.

Rate on Malleable Castings Declared Too High

WASHINGTON, Nov. 30.—Passing upon a complaint by the Grabler Mfg. Co., Examiner A. S. Parker, in a report to the Interstate Commerce Commission held that the fifth-class rate of 30c. per 100 lb. on malleable iron castings in carloads from Chicago to Cleveland has been unreasonable since July 13, 1925, to the extent that it exceeded 27c. He recommended establishment of the latter rate.

Start Cast Pipe Production at Provo, Utah

SAN FRANCISCO, Nov. 27.—The Pacific States Cast Iron Pipe Co. started production Nov. 22 on the property of the Columbia Steel Corporation 3½ miles south of Provo, Utah. The cast iron pipe company which is jointly owned by the Columbia Steel Corporation and the McWane Cast Iron Pipe Co., Birmingham, represents an investment of \$300,000. It will be operated at the outset to produce about 25 tons a day but will gradually approach its capacity of 50 tons a day as the Intermountain and Pacific Coast demands warrant it. About 125 men are employed at present.

PERSONAL

T. A. Clark has resigned, effective Jan. 1, as general manager Standard Engineering Co., Ellwood City, Pa., which, as announced in THE IRON AGE Nov. 18, has been merged with the Aetna Foundry & Machine Co., Warren, Ohio, into the Aetna-Standard Engineering Co. Mr. Clark has not announced his future plans. His resignation will terminate an affiliation of 20 years, during which time, as general manager in charge of sales and production, he saw the size and production of the plant treble. Besides filling the position of general manager, he also has been secretary and treasurer of the company.



T. A. CLARK

E. T. Strong, general sales manager Buick Motor Co., Flint, Mich., has been elected president and general manager of the company to succeed the late Harry H. Bassett. C. B. Durham, formerly assistant general manager, becomes vice-president of the company.

H. H. Engle, formerly general sales manager for Robert Gordon, Inc., Chicago, has been made vice-president and sales manager of the Hardy Metal Corporation, Seattle, Wash., manufacturer of non-corrosive contact metals. Mr. Engle's headquarters will be in Chicago for the next six months, and the company is considering the permanent establishment of its general sales office in that city.

Joseph V. Smith, formerly in charge of shovel interests for Hubbard & Co., Pittsburgh, has been appointed Pacific Coast manager of the company, with headquarters at the Emeryville, Cal., plant, which is devoted to the manufacture of pole line hardware. He will have charge of both sales and production.

Harold D. Mitchell has been appointed sales representative in western New York for the William Ganschow Co., Chicago, maker of gears and pinions. He will be located at 1543 Fillmore Avenue, Buffalo. Mr. Mitchell has been chief engineer for the Sumet Corporation, Buffalo, for a number of years.

F. Royal Gammon, recently appointed manager of the New York factory branch of the Chicago Belting Co., Chicago, was formerly assistant manager of the semi-finished and wire department of the Bethlehem Steel Co., Bethlehem, Pa. He was graduated in mechanical engineering from Lafayette College, Easton, Pa., in 1916, and previous to his association with the Bethlehem company was vice-president and general manager of the Frank Mossberg Co., Attleboro, Mass.

E. W. Saunders has been appointed district sales manager in northern Ohio for the Braeburn Alloy Steel Corporation, Braeburn, Pa., with headquarters at 421 Union Mortgage Building, Cleveland.

W. R. Foster, formerly sales engineer for the Bridgeport Brass Co., Bridgeport, Conn., has joined the sales promotion organization of the American Brown Boveri Electric Corporation, 165 Broadway, New York.

J. Herbert Johnson, until 1922 New York district manager, machine division, Norton Co., Worcester,

Mass., has been made a director of that company to succeed the late George I. Alden. He is a step-son of Professor Alden and will represent his estate on the board.

Mefford R. Runyon has been appointed New York district sales manager for the Bridgeport Brass Co., Bridgeport, Conn. Following his graduation in chemical engineering from Rutgers College, New Brunswick, N. J., he traveled as a public accountant in South and Central America and the West Indies for four years. Later he undertook successfully the reorganization of the Benson Rolling Mills, Inc., Glen Ridge, N. J.

Charles M. Griffith, for a number of years sales manager for William Wharton, Jr. & Co., Inc., Easton, Pa., has been made a vice-president of the company.

William F. Cole has been made treasurer of the Baldwin Chain & Mfg. Co., Worcester, Mass., succeeding the late William H. Gates, founder of the business. Mr. Cole, who retains his old office of vice-president, has been connected with the business for many years.

C. H. Norton, Red Stone Hill, Plainville, Conn., organizer of the Norton Co., Worcester, Mass., last week celebrated his seventy-fifth birthday.

Thordik Hansen, formerly works engineer for the A. O. Smith Corporation, Milwaukee, has been appointed works manager. H. S. Haselquist has been promoted to supervisor of tool rooms, and R. T. Bell has been given charge of tool design.

R. H. Knecht, manager of the Marion, Ohio, plant of the Pollak Steel Co., recently addressed the Marion Rotary Club on the subject of reclaiming steel rails.

Edwin P. Corey and James B. Roberts, who have been connected with the sales organization of the Youngstown Sheet & Tube Co. at the home office in Youngstown, have been appointed assistant general managers of sales. They were previously assistants in sales. George F. Holly, also connected with the home office, has been made manager of conduit sales and Walter E. Scott manager of sheet and plate sales.

James L. Wick has become the principal stockholder in the Falcon Bronze Co., Youngstown, Ohio. He succeeds G. A. Doeright, manager for many years, now confined to his home by ill health.

Lemuel V. Rockwell, Allan B. Rosenthal, Floyd V. Wile and Bryan G. Dryden have been added to the sales organization of Theodore Geissmann & Co., Chicago, dealer in iron and steel rolling mill products.

Henry E. Aldrich has been promoted to the position of general manager of the Wickes Boiler Co., Saginaw, Mich. J. Robert Fortune, formerly a district sales manager for the Heine Boiler Co., St. Louis, has been appointed general sales manager for the Wickes company, with headquarters at the company's Detroit office.

Charles Holloway, Jr., for the last several years manager of the San Francisco office of the Truscon Steel Co., has resigned and has been appointed general manager Golden Gate Atlas Materials Co., 544 Eighth Street, San Francisco. W. H. London and F. H. Maloney have been appointed joint managers of the San Francisco office of the Truscon Steel Co.

Earl G. Grover has been appointed to succeed J. Foster Rhodes as executive director of the Baker Iron Works, 912 North Broadway, Los Angeles. Mr. Rhodes had been a director of the company for many years, and has retired.

The Trumbull-Cliffs Furnace Co., Warren, Ohio, will enlarge its by-product coke plant by the addition of 17 Koppers-Becker ovens. The new ovens will make a total of 64 ovens in the plant and bring up the annual capacity from 309,100 tons to 392,100 tons of metallurgical coke.

OBITUARY

WILLIAM LARIMER JONES, president Jones & Laughlin Steel Corporation, Pittsburgh, died at his home in that city on Nov. 25, after a brief illness with pneumonia. He was born in Chicago, Dec. 7, 1865, and was graduated from Princeton University in 1887 with the degree of Bachelor of Science. After graduation he came to Pittsburgh as assistant to his father, the late Thomas M. Jones, who then was general manager of the Jones & Laughlin works. Upon the death of his father in 1889, he succeeded him as general manager. In 1906 he was elected vice-president of the company and was made president of the corporation at the time of its formation in December, 1922. He was a member of the American Iron and Steel Institute, the American Institute of Mining and Metallurgical Engineers and the Engineers Society of Western Pennsylvania. Mr. Jones devoted himself exclusively to the operating side of the steel business and was responsible for the growth of the organization with which he was associated throughout his business career. He possessed executive ability, which, based upon an extensive knowledge of steel production conditions abroad and in this country, was broad and tolerant.



W. L. JONES



ANDREW WHEELER

ANDREW WHEELER, president Morris, Wheeler & Co., Philadelphia, iron and steel merchant, died suddenly at his home in Ardmore, Pa., on Nov. 24, after an illness of less than two days. His father had been a member of the old firm of Morris, Jones & Co., which was succeeded in 1860 by Morris, Wheeler & Co., and both father and son spent their entire business lives in the organization. The younger Mr. Wheeler was born in Philadelphia on Jan. 2, 1866, and attended St. Paul's School, Concord, N. H., before entering the University of Pennsylvania, where he spent three years in the Whar-

ton School of Finance and Economy. He became associated with Morris, Wheeler & Co. in 1884 and was made a junior partner of the firm in 1892. Upon the death of his father in 1903 he became a senior partner and was elected president Jan. 1, 1925. In 1898 he was elected a director of the Pottstown Iron Co., Pottstown, Pa., and had been president of the company since 1913. During the War he served as chief of the bureau of steel warehouse distribution on the War Industries Board. He was elected vice-president of the American Iron, Steel and Heavy Hardware Association in 1919, and the following year was made president of that organization. He was also a director of the Cruse-Kemper Co., Ambler, Pa., manufacturer of tanks and gas holders. While he was not a member of the Steel Club, in which membership is restricted to manufac-

turers, it was decided by resolution that members should observe two minutes of silence in their places of business at noon on Friday, the day of the funeral.

WILLIAM A. LINDSAY, for many years engaged in gray iron and brass foundry business at Manayunk, Philadelphia, died Nov. 23 at his home, 562 East Leverington Avenue, Roxboro, Pa. He had been ill about six months, and was 60 years of age.

JOHN M. BROWNING, inventor of the Browning machine gun, the 0.45 caliber automatic pistol and the machine gun rifle, all used by the American and allied armies during the World War, died Nov. 26 at Herstals, Belgium, near Liège, where he had gone to perfect a new type of double-barreled shotgun for the Belgian Government. He was 72 years of age, and had been prominent as an inventor of firearms since the time of the Spanish-American War. The manufacturing rights in this country on a large number of his patents were owned by the Colts Patent Fire Arms Mfg. Co., Hartford, Conn.

ALFRED JAMES, proprietor of the James Foundry, La Crosse, Wis., died Nov. 25 following an operation. He was born in Shrewsbury, England, 70 years ago, and with his brother settled at La Crosse in 1873 and acquired a foundry and machine shop business. Alfred James assumed entire ownership in 1901.

D. FAIRFAX BUSH, for many years one of the most prominent pig iron merchants of the country and for a long time senior partner of Crocker Brothers, pig iron and ferroalloy merchants, 21 East Fortieth Street, New York, died Nov. 26, at his residence, 19 West Fifty-third Street, of an acute attack of heart disease. He was born 62 years ago in Weston, Mass., and was a son of the late James Bush, long in the American diplomatic service in China. He came to New York at the age of 17, being employed by Drexel, Morgan & Co. In 1883 he joined the staff of Crocker Brothers and later became a salesman. In 1898 he was made a partner. Following the death of George A. Crocker in 1906, Mr. Bush became the senior partner. When Crocker Brothers and Rogers Brown & Co. were consolidated under the name Rogers Brown & Crocker Brothers, Inc., in July, 1925, Mr. Bush was elected chairman of the board of directors. He was engaged for a period of 43 years in the iron business, specializing in ferromanganese. Because of failing health, he closed his active career in July, this year, when he retired from the chairmanship of the board of directors of the company.



D. F. BUSH

JAMES BARNES, for many years president and general manager of the old C. T. Ham Lantern Mfg. Co., Rochester, N. Y., died Nov. 26 at his residence in that city. During his presidency the Ham interests were acquired by the R. E. Dietz Co., New York, and Mr. Barnes for a number of years served the latter company as its sales agent in the Rochester territory.

JOHN KING McLANAHAN, JR., formerly president of the Union Shovel Works, Inc., Union Furnace, Pa., died suddenly on Nov. 21 at his home in Pittsfield, Mass. He was born in 1871, and at an early age entered the machine shop of the McLanahan-Stone Machine Co., Hollidaysburg, Pa., of which he was treas-

urer and a director at the time of his death. He was associated for a number of years with the Jones & Laughlin Steel Co., Pittsburgh, as president of the Blair Limestone Co.

CHARLES F. MESSENGER, retired president of the Chicago Nut Mfg. Co., Chicago, died Nov. 29 while visiting the National Stock Show at Chicago.

Definitions of Pyrometric Terms

For the purpose of eliminating the elasticity which has characterized the use of pyrometric terms in the past the industrial group of the Association of Scientific Apparatus Makers, at a meeting some months ago recommended the following standardized definitions for general use.

Definitions

1. *Thermometer*.—A device for measuring temperatures.
2. *Pyrometer*.—A device for measuring high temperatures. The term is applied to those devices, the principal use of which is for measuring temperatures above a red heat (about 500 deg. C.).
3. *Resistance Thermometer*.—A thermometer which indicates temperature by means of the change with temperature of electrical resistance of one of its parts. It is a pyrometer when used at high temperatures (above 500 deg. C.), and in such case is preferably called resistance pyrometer.
4. *Radiation Pyrometer*.—A pyrometer which indicates temperature by means of the change with temperature of the heat radiated by a hot body. As nearly as possible the total heat radiated is used. Usually this temperature is measured by a thermocouple.
5. *Optical Pyrometer*.—A pyrometer which indicates temperature by means of the change with temperature of the light emitted by a hot body. As nearly as possible light of a single color (wave length) is ordinarily used.
6. *Thermocouple*.—A pair of electrical conductors so joined as to produce a thermal e.m.f. when the junctions are at different temperatures. It consists of conductors of different materials permanently joined at one end, the other ends being free to connect to an instrument for measuring e.m.f.
7. *Thermoelectric Pyrometer*.—A pyrometer which indicates temperature by means of the change with temperature of the e.m.f. of a thermocouple. It ordinarily consists of a thermocouple, a millivoltmeter, or other means of measuring e.m.f., and connecting leads. The measuring instruments may be classified as follows: Millivoltmeters; potentiometers; and their combination or modifications.
8. *Hot Junction*.—That junction of a thermocouple which is subjected to the higher temperature.
9. *Cold Junction*.—A junction of a thermocouple which is subjected to a lower temperature than the hot junction. This temperature is usually the temperature of reference.
10. *Extension Leads*.—A pair of lead wires of such material that when connected to a thermocouple the effective cold junction will be removed to the other end of the leads. Sometimes called compensating leads.
11. *Accuracy*.—In specifying the accuracy of a pyrometer the maximum error shall be expressed as a percentage of the full scale reading; or it may be specified as the maximum number of degrees of temperature.
12. *Sensitivity*.—The sensitivity of a pyrometer is its susceptibility to small changes of the temperature being measured. Specifically, it is defined as the smallest change in temperature which will cause a variation of one millimeter in the reading of the pyrometer.

It is stated that each of the terms was defined only after wide discussion with the Bureau of Standards and other authorities, and the definitions combine the thought of a representative group of those best qualified on nomenclature in the pyrometer field.

James Ely, Rochester, N. Y., is president of the association, and J. M. Roberts, 460 East Ohio Street, Chicago, is secretary and treasurer.

Will Sell Equipment of Sizer Forge Plant

The entire plant and equipment of the Sizer Forge Co., Scott and Larkin Streets, Buffalo, N. Y., have been purchased by the McCabe & Sheeran Machinery Corporation, 50 Church Street, New York, and will be placed on sale immediately. The company operated a forge shop, a machine shop and other departments of a complete forging plant.

GROWING TANK PRODUCTION

Kansas City Has Steel Tank Output of 120,000 Tons Annually

The development of oil fields, particularly in the Panhandle district of Texas and the Seminole area of Oklahoma, is largely responsible for the growth of Kansas City as an important center for the production of steel tanks. The annual tonnage of this product is put at 120,000 tons, and includes tanks with capacities ranging from 1 gal. to 88,000 bbl.

Truck tanks, fuel oil storage tanks for domestic use and farm equipment, such as engine tanks, grain bins, water wagon tanks, cistern and water storage reservoirs, stock watering and dipping tanks and water towers are the types manufactured in quantity and find a market largely in the agricultural territory surrounding Kansas City. Other products are pressure tanks, underground storage tanks, vacuum tanks, refinery tanks and filtering tanks. Of particular importance is the bolted sectional tank, finding use in refineries, tank farms and industrial storage.

The greater part of the sheet and plate steel, structural shapes, rivets, bolts, pipe, tubing and other raw materials used in the manufacture of tanks is shipped from Chicago, Pittsburgh and St. Louis districts, but in the last year the Sheffield Steel Corporation of Kansas City, began to produce steel sheets.

The American Steel Works, specializing in welded steel tanks and miscellaneous sheet metal products for the oil fields, has recently added a plant building to double its output. The Black, Sivalls & Bryson Mfg. Co., recently organized, is manufacturing riveted and welded tanks in 25 to 10,000 bbl. capacities, partly for export.

The Columbian Steel Tank Co., Kansas City, which had its beginning in 1894 as a small tin shop operated by A. A. Kramer, has introduced recently a truck tank for the transportation of gasoline. The Kansas City Steel Tank Co., specializing in delivery truck and oil storage tanks in capacities up to 15,000 gal., is contemplating an extensive building program. The Kansas City Structural Steel Co. erects tanks for the oil country with capacities up to 80,000 bbl. The Kaw Steel Construction Co. also specializes in large units, and does heavy steel plate construction for power plants, coal mines, sugar and oil refineries and water and storage plants.

The Missouri Boiler Works rebuilt its present plant last year. It makes both riveted and welded oil tanks with capacities up to 25,000 bbl. and special equipment for the oil country. The Standard Steel Works is planning the erection of a new building which will double its present capacity for the building of oil tanks and special equipment. The Superior Steel Tank Co. builds oil tanks with capacities up to 20,000 gal.

Record Coal Output

Several new weekly records have been made recently in the production of bituminous coal. During the week ended Nov. 20 the output was 14,253,000 net tons—the highest tonnage ever raised in one week. This displaced the record of 13,756,000 tons of the preceding week and the 13,486,000 tons of the week ended Oct. 30. All three of these figures were successive high records. The week of Nov. 6, comprising the partial election day lay-off, showed 13,101,000 tons. Prior to 1926, the highest production ever recorded was 13,344,000 tons, in the last week before the great strike of 1919.

Recent progress in air transportation was discussed at a meeting in New York of the American Society of Mechanical Engineers on the evening of Nov. 23 at the Engineering Societies Building by J. E. Whitbeck, vice-president William E. Arthur & Co. An address was made also by J. T. Trippe, vice-president and general manager Colonial Air Transport, Inc., on "Safety in Air Transport."

British Coal Strike Breaking Up

District Agreements Bring Miners Back Slowly—Fuel Embargo Lifted—Shipyard Demand Fills Plate Mills—Continental Iron Advanced

(By Cable)

LONDON, ENGLAND, Nov. 29.

THE coal strike is crumbling and men are returning to the mines under district agreements, except in Durham and Wales, where the strike is still unsettled, although the industrial fuel embargo has been lifted.

Cleveland furnaces are hoping to resume operations by the end of the year, but fuel prices are still a vital factor. Coal and coke prices are declining but so far have been reduced by only a few shillings. Meanwhile the scarcity of pig iron is unrelieved. Hematite is unobtainable but £4 10s. per ton is named on East Coast mixed for first quarter delivery.

Foreign ore inquiry is increasing, but sales are small. German consumers have bought some Spanish grades.

Finished iron and steel are easier, with fuel supplies increasing, but no general resumption is anticipated before the middle of January. Steel makers are heavily booked, some plate mills requiring four to five months delay in shipment because of the activity of

shipyards where orders are increasing. The Anglo-Persian Oil Co. has ordered seven 10,000-ton and two 6400-ton tankers. The Burntisland Shipbuilding Co. has received orders for three vessels totaling 18,000 tons.

Tin plate is easier on slackened demand. January delivery has brought 23s. 6d. (\$5.70) per base box and December is quoted at 24s. to 24s. 6d. (\$5.82 to \$5.94) per base box. First quarter tin plate is quoted at 22s. 9d. to 23s. 3d. (\$5.51 to \$5.58) per base box. All prices are f.o.b. works port. Eastern interests are inquiring for 10,000 boxes of oil can sizes.

Galvanized sheets are quiet but steady, with makers' order books well filled. Black sheets continue inactive.

The European Rail Makers Association will meet in Paris, Dec. 10. British demand for Continental iron and steel is quiet as a result of the uncertain coal situation, consumers pressing for deliveries, which are greatly in arrears through congestion at foreign ports. The pig iron entente has raised foundry pig iron to £4 5s. per ton (\$20.61), f.o.b.

FRENCH PRICES MAINTAINED

Despite Slack Business—Pig Iron Differentials Revised—Wire Rod Syndicate Discussed

PARIS, FRANCE, Nov. 18.—The further advance of the franc, although considered desirable, is causing still greater quietness, buyers awaiting lower prices and sellers hesitating to reduce the present schedule with higher costs of production a certainty. High prices for fuel are proving a serious factor with most producers, as it is realized that any advance in selling prices under present conditions would be disastrous to business, so that this increase in costs must be absorbed by the makers. Export trade continues in moderate volume, but the higher value of the franc makes foreign sales less profitable.

Pig Iron.—At a recent meeting of the hematite pig iron producers it was decided to maintain the present

price of hematite iron, despite the increased cost of coke, so that actually the decision was in the nature of a reduction. It was also agreed that 35,000 tons should be placed at the disposal of domestic consumers for December with 20,000 tons for January and 10,000 tons for February. Phosphoric iron producers have also announced unchanged prices for December and have placed 35,000 tons for December, 20,000 tons for January and 10,000 tons for February. The differentials applying on rough and smooth skin phosphoric iron have been increased. No. 3 P. R. (rough skin) is now 13 fr. per ton less than No. 3 P. L. (smooth skin) compared with the former differential of 10 fr. No. 4 P. R. is 18 fr. less instead of 15 fr., No. 5 P. R. is 23 fr. less instead of 20 fr., depending upon the analysis, as follows: Sil. 1.70 to 2.30 per cent, 15 fr. instead of 12 fr.; sil. 1.50 to 2 per cent, 21 fr. instead of 18 fr.; and sil. 1.50 to 1.70 per cent, 25 fr. instead of 22 fr. per ton. At a recent meeting in Paris of French and Belgian phosphoric iron producers, it was decided to revise ex-

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.85 per £ as follows:

	£2 14s.	to £2 15s.	\$13.09	to \$13.33
Durham coke, f.o.b.	1 2		5.33	
Bilbao Rubio ore†	6 5		30.31	
Cleveland No. 1 fdy. (nom.)	6 0		29.10	
Cleveland No. 3 fdy.	5 19		28.85	
Cleveland No. 4 fdy.	5 18½		28.73	
Cleveland No. 4 forge	3 15	to 3 15½	18.18	to 18.30
Cleveland basic (nom.)	4 12½		22.43	
East Coast mixed	4 8		21.34	
East Coast hematite	7 15	to 8 0	37.58	to 38.80
Rails, 60 lb. and up	7 10	to 8 15	36.37	to 42.43
Billets	16 0		77.60	
Ferromanganese	15 0		72.75	
*Ferromanganese	6 15	to 7 10	32.73	to 36.37
Sheet and tin plate bars, Welsh	1 2½	to 1 5	5.51	to 6.06
Tin plates, base box				
Black sheets, Japanese specifications	15 5	to 15 15	74.11	to 76.53
			C. per Lb.	
Ship plates	7 15	to 8 5	1.67	to 1.78
Boiler plates	10 11		2.28	
Tees	8 5	to 8 15	1.79	to 1.89
Channels	7 10	to 8 0	1.61	to 1.72
Beams	7 5	to 7 15	1.57	to 1.68
Round bars, ¾ to 3 in.	8 5	to 8 15	1.79	to 1.89
Steel hoops	10 10	and 11 0*	2.28	and 2.39*
Black sheets, 24 gage	12 10	to 12 15	2.70	to 2.76
Galv. sheets, 24 gage	17 5	to 17 10	3.73	to 3.78
Cold rolled steel strip, 20 gage, nom.	18 0		3.91	

*Export price.

†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports (Per Metric Ton)

Foundry pig iron: (a)				
Belgium	£4 5s.		\$20.61	
France	4 5		20.61	
Luxemburg	4 5		20.61	
Basic pig iron:				
Belgium	3 14	to £3 15s.	17.94	to \$18.18
France	3 14	to 3 15	17.94	to 18.18
Luxemburg	3 14	to 3 15	17.94	to 18.18
Coke	0 18		4.37	
Billets:				
Belgium	5 5	to 5 9	25.46	to 26.43
France	5 5	to 5 9	25.46	to 26.43
Merchant bars:				
Belgium	5 11½	to 5 15	1.21	to 1.25
Luxemburg	5 11½	to 5 15	1.21	to 1.25
France	5 11½	to 5 15	1.21	to 1.25
Joists (beams):				
Belgium	5 12½	to 5 15	1.22	to 1.25
Luxemburg	5 12½	to 5 15	1.22	to 1.25
France	5 12½	to 5 15	1.22	to 1.25
Angles:				
Belgium	5 15		1.25	
½-in. plates:				
Belgium (nominal)	6 17	to 7 0	1.48	to 1.54
Germany (nominal)	6 17½	to 7 0	1.51	to 1.54
¾-in. ship plates:				
Belgium	6 7½	to 6 12½	1.40	to 1.44
Luxemburg	6 7½	to 6 12½	1.40	to 1.44
Sheets, heavy:				
Belgium	6 3	to 6 4	1.33	to 1.34
Germany	6 3	to 6 4	1.33	to 1.34

(a) Nominal.

port selling prices, necessitated by the increase in value of the French franc. The new prices, effective until the end of February, are: For Great Britain and other overseas shipment, £4 5s. per gross ton, f.o.b. Antwerp; for Holland, £4 5s. per metric ton, f.o.b. frontier; for Switzerland, 100 Swiss francs per metric ton, delivered Basle, ex-duty; for Italy, £4 per metric ton, Italian frontier. Although the German-French-Luxemburg agreement for delivery of about 100,000 tons of Lorraine iron to Germany has not yet been officially signed, it is generally believed to be in effect. At present, however, French producers are not particularly anxious to deliver iron to Germany at the German domestic price, which is not more than £3 9s. (\$16.73) per ton, about 70 gold marks.

Semi-Finished Material.—On export sales there has been a slight softening of prices but the domestic market is unchanged. Foreign demand is still fairly active for sheet bars, but billets and blooms are less active than in recent months. Billets are quoted at £5 5s. to £5 6s. per metric ton (\$25.46 to \$25.70); blooms at £4 17s. 6d. per ton (\$23.63) and sheet bars at £5 10s. to £5 11s. per ton (\$26.67 to \$26.91), all f.o.b. Antwerp.

MACHINERY EXPORTS

October Send-out Lowest in 16 Months, but Ten-Month Total Is 11 Per Cent Above 1925

WASHINGTON, Nov. 29.—Declining almost \$9,000,000, exports of machinery in October were valued at \$27,965,148, against \$36,901,003 in September. With a total value of \$335,379,213 for the 10 months ended with October, however, a gain of \$33,000,000 (or 11 per cent) was made over the corresponding period of last year, with an aggregate of \$302,379,057.

Exports of items included in the industrial machinery list by the Division of Statistics, Department of Commerce, amounted to \$13,349,915 in October, against \$16,270,297 in September. The Industrial Machinery Division, Department of Commerce, gives a total export movement of \$11,682,604 in October, against \$14,391,358 for September, but confines its list to power-generating machinery, except electric and automotive; construction and conveying machinery, mining, oil-well and pumping machinery, metal-working machinery, textile, sewing and shoe machinery and "other factory and mill machinery." Upon this basis the machinery division has prepared charts showing the movement of industrial machinery from the United States. One is based upon monthly shipments and the other upon three months' moving averages.

United States Exports and Imports of Machinery

	Exports of Machinery	Imports of Machinery	Exports of Metal-Working Machinery
The year 1924... 1925	\$317,040,424	\$9,711,618	\$8,644,444
January	28,117,952	803,829	845,986
February	23,215,776	814,703	707,445
March	33,932,473	999,237	1,364,930
April	33,468,086	1,167,099	1,694,761
May	32,164,865	861,655	1,230,914
June	27,121,123	935,487	1,003,325
Fiscal year	325,578,294	10,404,337	14,011,404
July	32,320,533	905,872	1,188,069
August	38,768,823	747,912	1,308,372
September	30,719,342	956,250	989,379
October	31,271,007	996,557	905,826
November	30,084,814	876,113	1,007,376
December	37,933,511	1,448,316	1,155,660
The year 1925....	385,376,676	11,577,911	13,052,916
1926			
January	34,590,693	1,659,971	853,276
February	32,269,707	1,469,170	1,294,934
March	35,241,960	1,567,912	1,297,616
April	38,755,467	1,814,021	1,479,337
May	32,707,863	1,494,156	1,004,298
June	30,498,054	1,484,127	1,024,252
Fiscal year	398,306,436	15,413,144	16,046,267
July	34,123,992	1,327,874	1,318,556
August	32,459,844	1,453,909	1,326,443
September	36,901,003	1,432,378	1,145,406
October	27,965,148	1,247,115	1,069,343
Ten months	335,379,213	14,819,209	11,839,272

Finished Material.—Demand for bars and beams is declining but export prices are somewhat advanced. Beams are quoted at £5 10s. to £5 12s. per ton (1.19c. to 1.21c. per lb.) and angles and bars at £5 12s. 6d. per ton (1.22c. per lb.), f.o.b. Antwerp. Most mills are engaged in a decided effort to maintain prices at the present level in the face of a declining demand, and higher fuel costs, although unsatisfactory in their curtailment of profits, have aided this campaign for maintenance of prices. The wire rod market is not overly strong with the domestic trade, but export prices, which were about £5 17s. per metric ton (\$28.36) recently have been advanced to about £6 2s. 6d. per ton (\$29.70), f.o.b. Antwerp. Hoops have been quoted for export at £6 17s. 6d. (1.49c. per lb.), which is 962.50 fr. per ton, about 120 fr. per ton less than the domestic price. The recent increase in wire rod prices is regarded in some quarters as the result of a reported agreement of European makers, including French, Belgian and German mills. Negotiations are pending for an international wire rod and wire products syndicate, and the recent rise in price is believed to be a part of a verbal agreement to maintain a profitable level.

Exports during October of industrial machinery showed declines as compared with October of last year in all of the principal groups in this class, with the exception of mining, oil-well and pumping machinery. The greatest decline was in power-generating machinery.

Exports of power-driven metal-working machinery in October were valued at \$1,069,343, against \$1,145,406 in September. For the 10 months they were valued at \$11,839,272, compared with \$14,679,167 for the corresponding period of last year. "Other" metal-working machinery to the value of \$12,469 was exported in October. The items of power-driven metal-working machinery listed in THE IRON AGE table numbered 368,

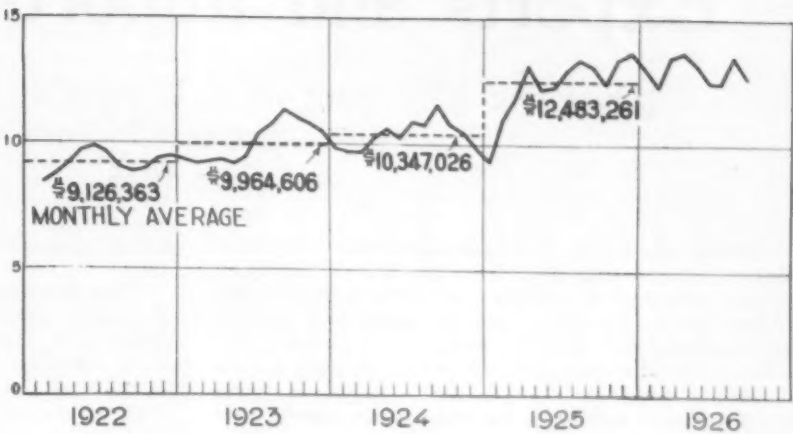
Imports of Machinery into the United States (By Value)

	October		Ten Months Ended October	
	1926	1925	1926	1925
Metal-working machine tools.....	\$32,527	\$27,752	\$364,369	\$310,762
Agricultural machinery and implements	258,212	201,411	4,340,570	2,587,943
Electrical machinery and apparatus	55,523	109,289	707,914	745,671
Other power-generating machinery.....	187	424	5,794	6,652
Other machinery.....	688,009	468,750	7,577,992	3,833,766
Vehicles, except agricultural	212,657	188,067	1,822,570	1,549,828
Total	\$1,247,115	\$995,693	\$14,819,209	\$9,034,622

Exports of Power-Driven Metal-Working Machinery

	October, 1926		September, 1926	
	No.	Value	No.	Value
Engine lathes.....	34	\$53,070	18	\$51,814
Turret lathes.....	11	21,059	9	24,739
Other lathes.....	29	45,965	48	44,838
Vertical boring mills and chucking machines	3	3,313	6	9,740
Thread-cutting and automatic screw machines	28	18,695	53	41,609
Knee and column-type milling machines....	11	27,165	17	28,883
Other milling machines	38	52,669	13	25,490
Gear-cutting machines.	15	17,380	40	25,672
Vertical drilling machines	15	11,450	32	13,541
Radial drilling machines	15	14,747	6	12,750
Sensitive drilling machines	5	1,906	43	2,277
Other drilling machines	31	21,962	128	28,780
Shapers and slotters...	22	25,204	149	29,068
Planers .....	..	..	2	15,255
External cylindrical machines	32	61,207	31	43,917
Internal grinding machines	12	26,565	86	39,332
Metal-working tool-sharpening machines.	67	33,729	45	24,935
Total	368	\$436,086	727	\$462,640

United States Exports of Industrial Machinery Show a Steady Rise Over the Past Five Years. The diagram, based on a 3-month moving average, to eliminate violent monthly fluctuations, indicates the extent of the gains, year by year. In 1926 a further advance is being made, though the improvement over 1925 is not heavy



with a value of \$436,086 for October, against 727, valued at \$462,640, in September.

Slightly Lower Imports in October

Imports of machinery carried in THE IRON AGE table were valued at \$1,247,115 in October, compared with \$1,432,378 in September. For the 10-month period the total was \$14,819,209, against \$9,034,622 for the corresponding term of 1925. Imports of industrial machinery in October were valued at \$494,371, against \$449,883 for October, 1925, while for the 10 months of 1926 and last year the totals were \$4,637,554 and \$3,930,550, respectively.

Canada took four locomotives, valued at \$20,337, in October and during the 10 months took 45, valued at \$563,602. Chile also took four locomotives, valued at \$24,000, in October and during the 10 months took

13, valued at \$194,200. Of the sewing machines exported in October, Mexico took 3083, valued at \$108,307, and during the 10 months the number going to that country was 38,391, valued at \$1,325,930. Sewing machines to the number of 992, with a value of \$61,141, were shipped to the United Kingdom in October and for the 10 months the number was 16,252, valued at \$901,332. Canada was sent 986 sewing machines, valued at \$44,428, in October, and for the 10 months took 7951, valued at \$359,787.

Great Britain was the largest foreign buyer of American typewriters, both in October and during the 10 months, taking 4264, valued at \$245,845, and 44,414, valued at \$2,435,060, respectively. France ranked second, taking 2546, valued at \$133,121, in October and 31,053, valued at \$1,629,646, during the 10 months.

Machinery Exports from the United States (By Value)

	October, 1926	October, 1925	Ten Months Ended October, 1926	Ten Months Ended October, 1925
Locomotives	\$266,972	\$1,106,422	\$4,790,445	\$5,281,561
Other Steam Engines	109,518	167,560	1,206,280	1,771,448
Boilers	127,494	94,113	1,394,625	1,683,066
Accessories and Parts	211,663	246,819	1,524,357	3,415,366
Automobile Engines	921,749	705,683	11,684,214	13,772,824
Other Internal Combustion Engines	485,174	735,916	7,674,124	6,764,593
Accessories and Parts	264,945	312,548	3,599,622	3,452,620
Electric Locomotives	267,991	118,652	2,330,521	480,480
Other Electric Machinery and Apparatus	615,987	572,522	6,102,582	5,743,028
Excavating Machinery	374,916	519,018	3,733,547	2,521,528
Concrete Mixers	64,150	78,783	631,609	657,732
Road-Making Machinery	113,208	148,084	1,507,283	1,354,457
Elevators and Elevator Machinery	463,026	194,575	4,361,325	1,859,226
Mining and Quarrying Machinery	891,824	898,190	12,560,898	8,351,074
Oil-Well Machinery	947,565	491,671	12,015,860	7,747,676
Pumps	408,001	624,051	5,013,607	6,166,077
Lathes	120,094	113,864	1,389,979	1,052,902
Boring and Drilling Machines	53,378	29,466	710,519	562,668
Planers, Shapers and Slotters	25,204	31,409	270,927	494,543
Bending and Power Presses	149,178	16,052	1,176,689	495,813
Gear Cutters	17,380	74,109	393,649	726,803
Milling Machines	79,834	103,328	817,834	1,358,437
Thread-Cutting and Screw Machines	18,665	167,094	539,110	1,094,254
Forging Machines	50,976	9,393	920,678	201,134
Sharpening and Grinding Machines	121,501	206,035	1,367,027	2,594,300
Other Metal-Working Machinery and Parts	490,025	399,179	3,881,926	4,527,647
Textile Machinery	632,738	884,337	8,620,626	9,173,961
Sewing Machines	771,246	811,838	7,209,651	7,368,500
Shoe Machinery	99,023	101,420	1,112,343	1,167,408
Flour-Mill and Gristmill Machinery	81,142	70,546	754,876	738,688
Sugar-Mill Machinery	539,668	1,097,686	3,212,379	6,364,307
Paper and Pul-Mill Machinery	582,051	269,158	2,776,071	1,365,126
Sawmill Machinery	55,712	83,406	831,863	661,337
Other Woodworking Machinery	59,065	84,614	983,949	1,125,118
Refrigerating and Ice-Making Machinery	383,757	178,057	3,949,865	1,874,775
Air Compressors	341,832	345,311	3,911,347	3,305,794
Typewriters	1,418,688	1,606,657	15,247,020	14,751,749
Power Laundry Machinery	73,149	40,740	1,135,515	842,726
Typesetting Machines	253,119	231,523	3,171,908	2,839,410
Printing Presses	387,238	266,149	5,322,980	3,639,939
Agricultural Machinery and Implements	3,408,297	5,311,831	76,116,353	65,845,313
All Other Machinery and Parts	11,022,775	10,670,852	109,423,250	96,175,649
Total	\$27,965,148	\$30,398,661	\$335,379,213	\$302,379,057

Seek Reduced Rates on Steel in Indiana

Fourteen representatives of Indiana shippers appeared before the Indiana Public Service Commission on Nov. 22 to seek a reduction of freight rates on certain manufactured steel products and a readjustment of rates on others. Among those testifying were H. C. Rockhill, general manager Fort Wayne Rolling Mill Co., Fort Wayne; John C. Fox, traffic manager Highland Iron & Steel Co., Terre Haute; S. S. Shambaugh, general sales manager Kokomo Steel & Wire Co., Kokomo; L. R. Martin, traffic manager Oliver Chilled Plow Co., South Bend; J. J. Crimmins, assistant traffic manager Studebaker Corporation, South Bend; J. B. Velie, assistant sales manager Weil & McClain Iron Works Co., Michigan City; and George Field, traffic manager Chrysler Corporation, Newcastle.

Power Transmission Machinery Catalog

A wide variety of mill power transmission equipment, including some new items, is described and illustrated in an attractive general catalog of more than 250 pages, issued by the Hill Clutch Machine & Foundry Co., 6400 Breakwater Avenue, N. W., Cleveland.

Shafting; safety collars; couplings of the clamp, keyless, compression; spiral jaw, flexible and other types; collar oiling bearings; base plates; floor stands; wall boxes and brackets; water-cooled bearings; and a large variety of hangers are described and illustrated. Clutches; pulleys, both clutch and plain; belt tighteners; rope sheaves; tension carriages; agitator drives; spur and other types of gears; speed transformers; and sprocket wheels are among other items listed. Several pages are devoted to useful information, and an index is provided for ready reference.

The opening of a patents room is announced by the commissioners of the Los Angeles Public Library. The patent files are said to represent the largest collection west of the Mississippi River, and consist of United States, British, Canadian, German and Cuban records.

Exports and Imports Both Off

Outgoing Movement in 10 Months 21 Per Cent Above
Last Year—Imports 25 Per Cent Up
from 1925

WASHINGTON, Nov. 26.—Declining 10,001 gross tons, exports of iron and steel from the United States in October amounted to 172,070 tons, against 182,071 tons in September. For the 10 months ended with October the aggregate was 1,749,029 tons, compared with 1,448,491 tons for the corresponding period of 1925, a gain of 300,538 tons, or 20.8 per cent. As the average monthly export movement for the present year to date has been 174,903 tons, October fell a trifle short.

Imports in October totaled 81,830 tons, the lowest since January. This compares with 85,484 tons in September, a decrease of 3654 tons. For the 10 months ended with October the total was 954,272 tons, against 765,187 tons for the corresponding period of last year, showing an increase of 189,085 tons. The average monthly import movement for the current year was 95,427 tons, with the four latest months well below this average.

Principal of the import decreases in October, compared with September, were in semi-finished steel, structural shapes and cast iron pipe. The major increases during the 10 months of 1926 over the like period of last year were in pig iron, going to 413,259 tons, against 353,380 tons; steel bars, increasing to 90,471 tons, against 46,536 tons; hoops, bands, cotton ties, etc., increasing to 21,210 tons, against 9670 tons; structural shapes, increasing to 95,297 tons from 68,658 tons; cast iron pipe, increasing to 62,401 tons from 35,-

268 tons, and rails, increasing to 59,716 tons from 36,988 tons.

The principal declines in exports in October under September were in semi-finished steel, rails and pipe. Black steel sheets increased to 15,119 tons from 9727 tons. For the 10 months the sharpest gains were in scrap, steel bars, wire rods, plates, galvanized and black sheets, tin plate, structural shapes and pipe.

Germany was again the leading source of imports in October, providing 21,574 tons. Of this amount, 12,565 tons consisted of pig iron. Germany also led for the 10 months, furnishing 227,923 tons. Belgium was close to Germany as the source of imports in October, with 21,217 tons, and was next to Germany also for the 10 months, with 188,485 tons. Belgium, like the United Kingdom and France, furnished no imports of pig iron in October, an unusual situation, due to the British coal strike in the case of the first two countries. British India provided only 454 tons of pig iron in October. For the 10 months, Germany furnished 136,400 tons of the entire pig iron incoming movement.

Exports of Iron and Steel from the United States

(In Gross Tons)

	October		Ten Months Ended October	
	1926	1925	1926	1925
Pig iron.....	2,205	2,874	18,833	25,718
Ferromanganese	49	49	562	4,150
Scrap	7,872	10,329	90,702	72,514
<i>Pig iron, ferroalloys, and scrap.....</i>	<i>10,126</i>	<i>13,252</i>	<i>110,097</i>	<i>102,382</i>
Ingots, blooms, billets, sheet bar, skelp....	13,005	6,845	80,057	61,795
Wire rods.....	978	1,587	14,304	17,777
<i>Semi-finished steel...</i>	<i>15,983</i>	<i>8,432</i>	<i>94,361</i>	<i>79,572</i>
Steel bars.....	10,562	8,704	111,790	91,090
Alloy steel bars.....	414	229	4,142	3,082
Iron bars.....	317	244	4,226	4,121
Plates, iron and steel	10,550	7,971	113,151	83,527
Sheets, galvanized....	12,104	9,679	142,250	132,250
Sheets, black steel....	15,119	6,999	140,727	72,793
Sheets, black iron....	1,120	1,489	15,335	11,664
Hoops, bands, strip steel	3,521	3,200	39,331	32,876
Tin plate; terne plate	27,950	14,712	190,885	128,056
Structural shapes, plain material....	10,922	13,796	131,022	82,452
Structural material, fabricated	3,260	5,829	66,706	56,711
Steel rails.....	13,917	9,437	144,930	140,270
Rail fastenings, switches, frogs, etc.	3,144	2,275	35,572	31,831
Boiler tubes, welded pipe and fittings...	21,023	14,239	224,476	201,114
Plain wire.....	1,844	3,195	27,724	30,560
Barbed wire and woven wire fencing.....	2,999	6,148	46,171	59,355
Wire cloth and screening	112	170	1,625	1,497
Wire rope.....	293	263	3,956	3,649
Wire nails.....	1,253	1,041	10,411	7,778
Other nails and tacks	517	679	6,902	7,535
Horseshoes	97	50	571	592
Bolts, nuts, rivets and washers, except track	924	1,178	11,366	14,222
<i>Rolled and finished steel</i>	<i>141,962</i>	<i>111,527</i>	<i>1,475,269</i>	<i>1,197,925</i>
Cast iron pipe and fittings	2,641	4,135	28,095	27,001
Car wheels and axles.....	923	2,125	14,735	17,377
Iron castings.....	749	1,047	7,860	9,141
Steel castings.....	429	294	6,511	3,831
Forgings	150	122	2,410	1,860
<i>Castings and forgings</i>	<i>4,892</i>	<i>7,723</i>	<i>59,611</i>	<i>59,210</i>
All other.....	1,107	883	11,691	10,302
Total	172,070	141,817	1,749,029	1,448,491

United States Imports of Pig Iron by Countries of Shipment

	October		Sept., 1926	Ten Months Ended Oct., 1926
	1926	1925		
United Kingdom.....	.....	13,948	.....	92,039
British India.....	454	16,533	3,742	79,446
Germany	12,565	3,351	10,415	136,400
Netherlands	4,800	1,906	2,484	62,100
Canada	398	308	465	4,189
France .....	.....	277	.....	26,833
Belgium .....	.....	1,172	40	6,138
All other.....	630	214	362	6,114
Total	18,847	37,709	17,508	413,259

Sources of American Imports of Iron Ore

(In Gross Tons)

	October		Ten Months Ended October	
	1926	1925	1926	1925
Chile	91,400	119,300	1,131,600	812,800
Cuba	38,500	37,000	467,000	414,130
Spain .....	.....	8,045	82,412	138,170
Sweden	9,241	6,987	39,491	107,152
French Africa	12,900	12,500	285,962	159,995
Canada	571	1,032	16,338	6,720
Other countries.....	37,617	19,405	141,718	65,230
Total	190,229	204,269	2,164,571	1,704,197

United States Imports of Iron and Steel Products by Countries of Origin

(In Gross Tons)

From:	Oct., 1926	Jan. Through Oct., 1926	Sept., 1926
	1926	1926	1926
Austria	69	645	38
Belgium	21,217	188,485	21,309
Czechoslovakia	26	1,336	591
Denmark .....	.....	2,409	.....
France	8,141	111,691	9,733
Germany	21,574	227,923	29,378
Italy	166	835	106
Lithuania .....	.....	1,530	.....
Netherlands	6,822	81,977	4,094
Norway	1,045	12,371	38
Poland and Danzig.....	984	1,800	.....
Sweden	2,588	24,431	2,377
United Kingdom	4,951	119,920	1,831
Other Europe	2	825	.....
Europe	67,585	776,178	69,495
Canada	10,181	72,549	10,854
Panama .....	.....	7,748	.....
Mexico .....	.....	8,061	38
Cuba	3,600	9,357	1,349
Other America	7	482	.....
America	13,788	98,197	12,241
India	454	79,856	3,742
Other Asia	3	34	6
Algeria and Tunis.....	.....	7	.....
Total	81,830	954,272	85,484

Of the exports in October, Canada led by far as the destination country, taking 69,427 tons, while for the 10 months Canada took 700,075 tons, or 40 per cent of the total. This compares with 491,297 tons for the corresponding period of last year. Japan and Chosen ranked second as the destination of October exports, taking 27,071 tons, and occupied a similar position with regard to exports for the 10 months, taking 208,451 tons, against 102,053 tons for the corresponding period of last year. Japan led as the foreign market in October for black steel sheets, taking 8567 tons, and also for the 10 months, taking 72,692 tons of this product. That country also led as the destination of exports of

Imports of Iron and Steel in Gross Tons

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
Calendar year 1924....	556,814	209,109	59,910	255,157
January, 1925	77,105	41,344	7,165	15,498
February	92,353	47,803	10,997	9,666
March	92,115	50,803	5,691	24,330
April	71,233	33,299	7,699	14,941
May	67,789	21,260	8,721	29,139
June	82,853	35,657	4,259	20,720
Fiscal year 1925.....	749,393	325,199	77,291	186,939
July	64,642	24,881	3,601	28,586
August	68,489	30,707	3,526	34,168
September	68,445	29,917	3,594	22,709
October	80,045	37,709	11,226	23,054
November	79,771	34,712	6,173	23,238
December	98,400	53,333	7,703	36,908
Calendar year 1925....	943,240	441,425	80,269	265,688
January, 1926	79,067	48,428	3,055	37,498
February	100,273	59,122	5,194	27,239
March	93,107	54,825	4,606	27,391
April	107,636	54,359	6,949	59,666
May	108,731	57,211	3,002	21,633
June	124,215	43,106	5,277	31,315
Fiscal year 1926.....	1,080,781	528,305	64,106	388,407
July	82,411	32,206	1,702	34,133
August	91,578	26,538	4,611	41,075
September	85,484	17,508	2,525	18,167
October	81,830	18,847	4,879	13,331
Ten months.....	954,272	413,259	42,000	307,167

*Not included in "total imports." These figures are for manganese contents of the ore.

Imports of Iron and Steel Into the United States
(In Gross Tons)

	October		Ten Months Ended October	
	1926	1925	1926	1925
Pig iron	18,847	37,709	413,259	353,380
Ferromanganese(a) ..	3,067	11,097	31,908	62,337
Ferrosilicon	1,812	129	10,092	4,066
Scrap	13,347	4,807	72,828	76,237
Pig iron, ferroalloys and scrap.....	37,073	53,742	528,087	496,020
Steel ingots, blooms, billets and slabs...	1,783	1,813	28,435	23,043
Iron blooms, slabs, etc.	.....	.....	323	.....
Wire rods	1,289	893	8,016	6,378
Semi-finished steel...	3,072	2,706	36,774	29,421
Rails and splice bars.	5,396	457	59,716	35,268
Structural shapes...	10,892	7,374	95,297	68,658
Boiler and other plates	270	232	3,892	642
Sheets and saw plates	1,257	210	7,886	2,996
Steel bars.....	9,273	3,410	90,471	45,536
Bar iron.....	405	1,083	4,483	10,153
Hoops, bands and cotton ties.....	2,768	.....	21,210	.....
Tubular products wrought(b)	2,128	8,835	20,734	63,169
Nails, tacks, staples..	571	1,205	4,184	2,358
Tin plate.....	14	66	2,050	266
Bolts, nuts, rivets and washers	46	21	351	100
Round iron and steel wire	452	334	3,382	3,357
Barbed wire.....	58	.....	2,674	.....
Flat wire; strip steel.	319	190	3,527	1,800
Steel telegraph and telephone wire....	914	.....	1,035	.....
Wire rope and strand	169	104	2,325	1,798
Other wire.....	1	.....	1,431	.....
Wire cloth and screening	29	.....	280	.....
Rolled and finished steel(b)	34,962	23,521	324,928	237,101
Cast iron pipe.....	6,553	(c)	62,401	(c)
Castings and forgings	170	194	2,082	2,645
Total	81,830	80,163	954,272	765,187
Manganese ore(a)....	13,331	23,054	307,167	195,542
Iron ore.....	190,229	204,317	2,164,571	1,704,245
Magnesite	2,160	1,214	64,553	74,579

(a) Manganese content only, excluding shipments of ore from Cuba, which are stated in gross weight and which amounted to 2 tons in October.

(b) Prior to January, 1926, this includes some cast iron pipe, under the heading "tubular products."

(c) Included under tubular products.

Exports of Iron and Steel in Gross Tons

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914....	2,406,218	221,582	145,720
*Average, 1915 to 1918....	5,295,333	438,462	1,468,020
*Average, 1919 to 1923....	3,078,724	123,837	149,218
Calendar year 1924.....	1,805,073	41,473	114,417
January, 1925	141,777	1,298	5,764
February	102,299	1,413	7,516
March	155,384	2,037	7,951
April	155,375	1,632	6,831
May	150,612	2,316	7,360
June	136,847	2,507	7,804
Fiscal year 1925.....	1,663,084	29,563	107,988
July	139,861	2,348	10,701
August	188,465	5,944	8,024
September	136,791	3,349	8,186
October	141,817	2,374	8,432
November	171,134	4,272	16,783
December	142,209	2,626	12,282
Calendar year 1925.....	1,762,571	32,674	108,681
January, 1926	174,585	1,663	4,388
February	157,187	1,478	5,615
March	169,438	1,489	6,050
April	194,449	2,010	7,167
May	173,418	1,107	9,880
June	159,506	1,369	6,714
Fiscal year 1926.....	1,948,860	30,587	103,271
July	194,717	2,595	14,558
August	171,588	2,744	14,437
September	182,071	2,173	12,569
October	172,070	2,205	13,983
Ten months	1,749,029	18,833	94,361

*Calendar years.

rails in October and for the 10 months, taking 5517 tons and 28,035 tons, respectively.

Of the 7434 tons of black welded pipe exported in October, Japan took 2819 tons; the United Kingdom, 974 tons; Canada, 787 tons; Venezuela, 414 tons; Belgium, 382 tons; Mexico, 257 tons and Cuba, 260 tons. Galvanized pipe exports in October totaled 3170 tons, of which Belgium took 458 tons and the United Kingdom, 432 tons.

Of the 9273 tons of steel bars imported in October, 1405 tons came from Germany, 1354 tons from Sweden and 288 tons from France. Imports of structural shapes, amounting to 10,892 tons, came mainly from Belgium, 7502 tons; France, 1766 tons and Germany, 1502 tons. Of the 6553 tons of cast iron pipe imported during that month, 3662 tons came from France, 2366 tons from Belgium and 508 tons from Germany.

Canada provided 2150 tons of the 3067 tons of ferromanganese imported. Of the 13,331 tons of manganese ore imported Brazil supplied 7365 tons; British India, 3640 tons and British West Africa, 2326 tons. Only two tons came from Cuba. Of the 190,229 tons of iron ore imported in October, 91,400 tons came from Chile and 38,500 tons from Cuba. None came from Spain, owing to the cessation of mining. Newfoundland provided 27,618 tons.

A rail joint which is designed to eliminate shocks has been invented by C. G. Blomquist, Knivsta, Sweden, according to a report received by the Department of Commerce from Assistant Trade Commissioner Emil Kekich, Stockholm. The new joint has been tested for three years by the Swedish State Railroads. The invention is patented in the Scandinavian countries, Finland, Germany, France, Belgium, England, the United States and Canada. A Swedish company has been organized to exploit the invention and negotiations are being carried on with German and French railroads regarding it.

The General Electric Co. has announced a reduction averaging 5 per cent in the prices of distribution and small power transformers, of 500 kva. and less, 73,000 volts and below, effective Nov. 8. "The reduction is in line with the policy of the company," says the official announcement, "in giving the trade the benefit of economies resulting from improved engineering and manufacturing methods and quantity production. This is the fifth reduction made by the company since 1920 on this class of material."

Machinery Markets and News of the Works

BUSINESS IS LIGHT

Machine Tool Buying Falls Off Generally in November

Inquiries Are Fairly Numerous but Much of the Prospective Ordering Will Go Over to New Year

NOVEMBER business in machine tools fell off in all sections of the country, but the decline from the October volume may not be so great as was indicated earlier in the month. Some of the slump is attributed to the approach of the year-end, rather than to any

lack of confidence among buyers. Inquiries are fairly numerous, indicating that if general business conditions start out promisingly in 1927 much of the prospective buying will be considered at that time.

Interest naturally centers in what automobile manufacturers may do. At present they are buying little and apparently are waiting until their business picks up. Some business in fair-sized lots is pending in the Detroit district.

Railroads are making a few inquiries, but the only large buying in prospect in that field is the list of the Norfolk & Western, pending for months, against which a few tools are reported to have been ordered.

New York

NEW YORK, NOV. 30.

INQUIRIES are fairly numerous for machine tools, but there is a hesitancy on the part of prospective buyers in placing orders, and it is apparent that much of the pending business will go over until after the first of the year. November business fell considerably below that of October in many local sales offices. Among the sales of the week were the following: 27-in. x 16-ft. lathe to New York Central Railroad; vertical shaper to a Milwaukee motor truck manufacturer; jig borer and 13-in. geared-head lathe to the Westinghouse Electric & Mfg. Co., Springfield, Mass.; an automatic milling machine to a steel company in St. Louis; a jig borer to a shoe machinery company in New England; a vertical shaper to a playing card company in Cincinnati; 13-in. geared-head lathe to a Boston manufacturer; 10-in. tool maker's lathe to a safety razor company in Boston; 6-ft. deep-hole drilling machine to a motor truck company in Cleveland; a contour cutter grinder to a ball bearing company at Bristol, Conn.; a worm grinder to a Saginaw, Mich., manufacturer; a bench lathe to an electrical company at Camden, N. J.

Bids are being asked by the Superintendent of Light-houses, Staten Island, N. Y., until Dec. 15, for two 30-hp. vertical Diesel engine-driven air compressor units, proposal 22855.

F. S. Parker, 280 Madison Avenue, New York, architect, has plans under way for a two-story automobile service, repair and garage building, 170 x 175 ft., at Belmont Avenue and Fordham Road, to cost \$150,000.

The Penn Brass & Bronze Works, 107-17 Dobbin Street, Brooklyn, is having plans drawn for a new two-story foundry, 40 x 100 ft., to cost about \$21,000. A portion will be used for an office. Gustave Erda, 826 Manhattan Avenue, is architect.

The Innovation Trunk Co., 329 Fifth Avenue, New York, manufacturer of metal reinforced luggage, etc., with factory in the Bronx, has leased an entire floor in the building at Wilbur and Ely Avenues, Long Island City, for a new plant, and will remove to this location, providing additional equipment for increased production.

The Bush Terminal, Inc., foot of Forty-third Street, Brooklyn, has awarded a general contract to the Turner Construction Co., New York, for a new power plant, to cost close to \$1,000,000 with machinery.

Emery Roth, 1440 Broadway, New York, architect, has filed plans for a three-story automobile service, repair and garage building, 78 x 150 ft., at 204 West 101st Street, to cost approximately \$150,000 with equipment.

The Rainbow Light, Inc., Thirteenth Street, Long Island City, manufacturer of electric tube lights, etc., has leased additional space in the new building now occupied in part,

totaling in all more than 40,000 sq. ft. of factory space, and will use for expansion.

The Cork Import Corporation, 345 West Fortieth Street, New York, has arranged for a lease of an entire building at the Kenna Terminal, Port Newark, Newark, N. J., for the manufacture, storage and distribution of cork products, including refrigerating insulation, etc.

The Sutter Marine Equipment Co., foot of East Ninety-second Street, Brooklyn, is said to be planning the installation of additional equipment, including a lathe and other tools.

The Board of Education, Millerton, N. Y., is said to be considering the installation of manual training equipment in a proposed two-story high and grade school estimated to cost \$130,000, for which bids will soon be asked on general contract. W. J. Beardsley, 49 Market Street, Poughkeepsie, N. Y., is architect.

Nathan Korn, 110 West Fortieth Street, New York, architect, has filed plans for a four-story automobile and motor truck service, repair and garage building on block bounded by 66-68 Cortlandt Street, 170-4 Greenwich Street, 59-61 Dey Street, and 173-77 Washington Street, to cost approximately \$200,000.

The Board of Education, 500 Park Avenue, New York, is said to be planning the installation of a manual training department in the proposed four-story school on Mace Avenue, Bronx, to cost about \$430,000. William H. Gompert, Flatbush Avenue Extension and Concord Street, Brooklyn, is architect.

The Board of Transportation, 49 Lafayette Street, New York, has authorized the erection of the fourth addition to the subway car repair and reconditioning shops at Lenox Avenue and 148th Street, to cost about \$450,000.

Charles Schneider, Sixty-fourth Street and Fifth Avenue, New York, architect, has plans for a three-story automobile service, repair and garage building, 80 x 100 ft., at 204-8 East Ninety-seventh Street, to cost about \$115,000 with equipment.

The Mutual Electric & Hardware Mfg. Co., 28 Verandah Place, Brooklyn, contemplates the installation of additional machine tool equipment at its plant.

The E. P. Gleason Mfg. Co., Inc., New York, recently organized, will take over and expand the company of same name with headquarters at 37 Murray Street, manufacturer of electric lighting fixtures and equipment. The company is arranging for quantity output of a new commercial lighting unit, known as Gleasonite. George E. Mallinson is president of the new organization; Perry Gleason, vice-president; and Harold C. Albertson, treasurer and general manager.

The Safety Cable Co., Bergen Point, Bayonne, N. J., has taken out a permit for a one-story addition to cost about \$27,000.

The Austin Mfg. Co., 400 North Michigan Avenue, Chicago, manufacturer of road machinery, has leased a one-story factory and two-story office at Irvington, N. J., for an Eastern assembling and distributing plant. Possession will be taken early in January.

The Board of City Commissioners, Newark, N. J., will

proceed with the construction of its proposed power house on block bounded by Franklin, Mulberry and Green Streets, to cost in excess of \$250,000 with equipment.

The Mountain Ice Co., 51 Newark Street, Hoboken, N. J., has plans for a new one and two-story plant at Newark, to cost about \$32,000. Philip Brown is company architect.

The United Engineering Corporation, Newark, manufacturer of mechanical equipment, has acquired about 2½ acres of land, improved with a two-story building, 40 x 220 ft., at Kenilworth, N. J., and will use for a new plant.

The Edgcombe Steel Co., Eleventh and Cambria Streets, Philadelphia, has purchased property, 115 x 660 ft., on Frelinghuysen Avenue, Newark, N. J., heretofore held by the Lidgerwood Mfg. Co., and plans the early erection of a one-story storage and distributing works, 100 x 300 ft.

In connection with the proposed replacement of the Essex County Vocational School for Boys, West Orange, N. J., recently destroyed by fire, the Vocational School Board, 969 Broad Street, Newark, Robert O. Beebe, director, is considering a site at Bloomfield, N. J., and will likely construct a new building at that place. It will cost in excess of \$150,000.

The Mount Holly Water Co., Mount Holly, N. J., will issue bonds for \$300,000, a portion of the proceeds to be used for extensions, including pumping equipment, etc.

Sears, Roebuck & Co., Chicago, are pushing construction on their new branch manufacturing and distributing plant at Port Newark, N. J. The project will consist of a total of 14 buildings and will cost upward of \$700,000 with equipment. The plant will be equipped for an annual output of 130,000,000 ft. of lumber for building portable houses. Joseph Coleman is plant manager.

The Air Reduction Co., 342 Madison Avenue, New York, has not purchased the controlling interest of the Commercial Acetylene Supply Co., Inc., 80 Broadway, New York, as reported in a previous issue, but has only made an investment in a part of its stock. The control and management of the latter company will continue as heretofore. M. J. Quinn is president of the Commercial Acetylene Supply Co.

The Hammar Structural Steel Co., Inc., Plaza Building, Long Island City, N. Y., has been organized with a capital stock of \$50,000 for the manufacture and erection of structural steel and kindred products. The company plans to build its own plant and is in the market for materials and equipment.

D. G. Aronberg, who has been manager of John Gill & Sons, general contractors, Cleveland, and William Fried, a New York contractor, have organized the Aronberg-Fried Co., which will engage in the general contracting business. The company's office will be at Forty-second Street and Madison Avenue, New York.

The Richmond Hill Iron Foundry, 126th Street and Ninetieth Avenue, Richmond Hill, N. Y., was virtually destroyed by fire on Nov. 26, when a spark from one of the forges ignited the wood building which housed it. The foundry had been operated for thirty years in the same building. The loss is estimated at \$75,000.

A sheet metal cabbaging press is wanted by D. L. Canfield, 222 Riverside Avenue, Newark, Logeman preferred; magnetic pulley, 7 x 7 cabbage or smaller, and shear for 3-in. pipe.

Buffalo

BUFFALO, NOV. 29.

OVENS, power equipment, conveying and other machinery will be installed in the proposed addition to the plant of the Ward Baking Co., Syracuse, N. Y., estimated to cost \$500,000. Headquarters are at 367 Southern Boulevard, New York.

The Sylvanite Gold Mines, Ltd., care of Edward L. Koons, 110 Franklin Street, Buffalo, president, has work in progress on a new mill at Kirkland Lake, Ont., to cost in excess of \$100,000. It is expected to have the plant ready for service late in the spring.

The Board of Aldermen, Lockport, N. Y., is said to be planning the installation of a pumping plant in connection with a proposed filtration station in the Fourth Ward, for the municipal waterworks, estimated to cost \$500,000 with equipment.

The Board of Trustees, Adams, N. Y., is asking bids until Dec. 15 for equipment for extensions in the water system, including pumping plant, etc. F. J. Williams is president.

The Ogden R. Adams Co., Rochester, N. Y., is inquiring for a 14 x 6 late model Hendey lathe for gage work.

New England

BOSTON, NOV. 29.

NOVEMBER has been a poor month for most New England machine tool dealers, and manufacturers, generally, are less busy than at the beginning of the month. Local sales reported the past week were again few. Two new jig boring machines, a combination lathe and a Pratt & Whitney lathe to Massachusetts and New Hampshire shops, and a used steam hammer to a Western manufacturer were among the transactions. New inquiries are more scarce than a week ago and a majority of those outstanding the past month give little indication of closing this year. It is expected, however, that some orders will be closed this month with a 1927 dating, but the amount involved, probably, will not be large. Local firms which recently quoted on export machinery business have had no further word from such prospects.

Work has started on a one-story, 86 x 126-ft. machine shop for the J. D. Crosby Co., Prairie Avenue, Pawtucket, R. I. The Central Engineering & Construction Co., 210 Main Street, Pawtucket, has the general contract.

The organization of the Long Security Lock Co., Hartford, Conn., has been completed. The company will begin business with a paid-in capital of \$300,000 and is controlled by the Gray Telephone Pay Station Co. George A. Long is president and treasurer; Edward Hagey, secretary, and Ralph Soby, assistant secretary. It will manufacture locks for safe deposit boxes, cash registers and the like. Special production machinery is being built by the Pratt & Whitney Co., Hartford.

William H. Allen, president Uncas National Bank, Norwich, Conn., has been appointed by the court to arrange for the sale of the plant and equipment of the Davis-Warner Fire Arms Co., which has been in the hands of a receiver since August. No date has been set for the sale.

The Kingsbury Mfg. Co., Keene, N. H., has changed its name to the Kingsbury Machine Co., effective Dec. 2.

The Boston & Maine Railroad Co., North Station, Boston, has plans for a new one-story boiler and plate shop at Billerica, Mass., 150 x 572 ft., estimated to cost \$500,000 with equipment. Several existing departments will be removed from the present shops to the new structure.

The Perkins Machine & Gear Co., Springfield, Mass., recently formed with a capital of \$500,000 and 15,000 shares of stock, no par value, will succeed to the local plant and business of the Perkins Appliance Co., manufacturer of tools, gears, broaching machines, etc. The new organization plans to increase production to include a new multi-cutting machine for the manufacture of small metal parts. Adolph W. Gilbert, president Chapman Valve Mfg. Co., Indian Orchard, Mass., is chairman of the board; Julian W. Perkins, president; and John Oakley, for some time works manager for the Bausch Machine Tool Co., Springfield, will be vice-president and production manager. The company has arranged for a preferred stock issue to total about \$429,500, to carry out the expansion program and for general financing.

The Norfolk Woodworking Co., Wyman Road, Braintree, Mass., has plans under way for a new plant at Quincy, Mass., estimated to cost close to \$185,000 with machinery. The two main mills will be 140 x 250 ft., and 60 x 140 ft., respectively; a power house, 40 x 45 ft., will be constructed. L. S. Joslin, 339 Newbury Street, Boston, is architect.

The Truscon Steel Co., Youngstown, Ohio, is said to be planning the construction of a new storage and distributing plant at Boston early next year. Factory branches and distributing plants will also be erected at Chicago and Indianapolis. Julius Kahn is president.

R. M. Stowell, 184 Boylston Street, Boston, architect, is completing plans for a new three-story automobile service, repair and garage building, 200 x 300 ft., at South Boston, estimated to cost \$750,000 with equipment. H. B. Cleverdon, 184 Boylston Street, is engineer.

The Beacon Oil Co., 111 Devonshire Street, Boston, has purchased property at Hartford and Wethersfield, Conn., as a site for a new storage and distributing plant, including unloading docks for tankers, pipe lines, power and pumping machinery, etc., to cost in excess of \$250,000.

The Connecticut Foundry Co., Rocky Hill, Conn., has awarded a general contract to C. P. Waterman, Inc., 43 Farmington Avenue, Hartford, Conn., for a one-story addition.

The New England Aircraft Co., Inc., Hartford, Conn., organized several months ago with a capital of \$50,000, will operate in conjunction with the Waco Co., Troy, Ohio,

The Crane Market

THERE is very little new inquiry and the market on both locomotive and electric overhead cranes is quiet. Included in prospective business are the six large chain blocks and 10-ton and 5-ton hand power cranes for the Phoenix Utility Co. and the six electric hoists and other equipment that it is reported Dwight P. Robinson & Co. are expecting to buy. Few new inquiries for locomotive cranes have appeared recently and prospective buyers are slow to close business.

Among recent purchases are:

American Car & Foundry Co., New York, a 10-ton, 20-ft. span electric traveling crane for Madison, Ill., from a Northwestern builder.

Welte-Mignon Corporation, 297 East 133rd Street, New York, a 1-ton, 19-ft. 11-in. span, single I-beam, hand power crane from the Chisholm-Moore Mfg. Co.

Armory Monumental Works, Providence, R. I., a 5-ton, 38-ft. hand power gantry crane from the New Jersey Foundry & Machine Co.

American Creosote Works, New Orleans, a 12-ton, standard gage locomotive crane from the Orton Crane & Shovel Co.

Lenox Sand & Gravel Co., New York, two crawl-tread locomotive cranes with 1½-cu. yd. buckets for use at 136th Street and 151st Street, New York, from the Osgood Co.

Central Railroad of New Jersey, New York, a 25-ton gantry crane, reported awarded last week, placed with the Niles-Bement-Pond Co.

Albert Smith's Sons, Irvington, N. J., two 1-ton and two 2-ton electric hoists from the Box Crane & Hoist Corporation.

Gibraltar Corrugated Paper Co., Fairview, N. J., a 2-ton capacity, monorail system with 800 ft. of I-beam from the Reading Chain & Block Corporation.

American Steel & Wire Co., Worcester, Mass., 160 hand power cranes of ½-ton capacity with ½-ton electric hoists for six different plants, from the Reading Chain & Block Corporation.

Wheeling Steel Corporation, Wheeling, W. Va., a 20-ton, 103-ft. span overhead crane for its Benwood works from the Alliance Machine Co. and an open-hearth charging machine for its Steubenville works from the Morgan Engineering Co.

American Nickel Corporation, Clearfield, Pa., a 5-ton, 40-ft. span overhead crane from the Northern Engineering Works.

Vollbrecht Cut Stone Co., Milwaukee, a 1-ton, 20-ft. span, 1-motor overhead crane from the Northern Engineering Works.

manufacturer of airplanes, handling the output in this section. It is purposed to establish an aviation field and shops. Percy H. Spencer, Hartford, is president, and Ralph Barrows, Glastonbury, Conn., vice-president.

The Board of City Trustees, Somerset, Mass., is said to be planning the installation of pumping equipment in connection with extensions in the municipal waterworks estimated to cost \$150,000. F. A. Barbour, Tremont Building, Boston, is engineer.

Philadelphia

PHILADELPHIA, Nov. 29.

PLANS have been filed by the Philadelphia Electric Co., Tenth and Chestnut Streets, Philadelphia, for a new steam-operated electric power house, estimated to cost \$600,000 with equipment. John T. Windrim, Commonwealth Building, is architect. The company has called a special meeting of stockholders on Jan. 26 to arrange additional financing for extensions and improvements.

The Department of City Transit, 1211 Chestnut Street, Philadelphia, H. E. Ehlers, director, is asking bids until Dec. 10 for 150 motor control equipments and 20 collector shoe fuses.

The Yellow Cab Co., 1730 North Broad Street, Philadelphia, has acquired a structure on Schuylkill Avenue, 101 x 436 ft., and will remodel for a new service, repair and garage building.

Work has been started by Connery & Co., Inc., Second and Luzerne Streets, Philadelphia, operating a boiler and plate works, for an addition to cost in excess of \$85,000 with equipment.

S. L. Allen & Co., Fifth Street and Glenwood Avenue, Philadelphia, manufacturers of agricultural implements and equipment, have asked bids on a general contract for an addition, to cost in excess of \$50,000 with equipment. The Ballinger Co., Twelfth and Chestnut Streets, is architect and engineer.

The Day & Zimmermann Engineering & Construction Co., affiliated with Day & Zimmermann, Inc., Sixteenth and Walnut Streets, Philadelphia, operating electric light and power properties, is arranging for an increase in capital from \$1,500,000 to \$4,000,000 to provide for expansion.

The Philadelphia Motor Service Co., Nineteenth and Buttonwood Streets, Philadelphia, has asked bids on a general contract for a new motor equipment and repair works, to cost close to \$70,000 with equipment. Andrew J. Sauer & Co., Schaff Building, are architects and engineers.

The Trenton Brass & Machine Co., Prospect and Dale Streets, Trenton, N. J., has awarded a general contract to the R. T. Bowman Co., Broad Street Bank Building, for a one-story addition.

The Board of Education, Shamokin, Pa., contemplates the installation of manual training equipment in its proposed two-story and basement high school to cost \$350,000, for which superstructure will proceed at once. Austin L. Reilly, Coal Exchange Building, Wilkes-Barre, Pa., is architect.

The Reading Co., Reading Terminal, Philadelphia, is said to be planning expansion in its yards and shops at Rutherford, Pa., in connection with its proposed lease of the Lehigh

& New England Railroad. The company has lately acquired more than 500 acres of adjoining land for the development, with cost reported more than \$1,000,000.

The Lawrence Portland Cement Co., Northampton, Pa., with main mill at Siegfried, Pa., has acquired the plant and business of the New England Cement & Lime Co., Thomaston, Me., for \$1,500,000. The new owner has plans for extensions in the lime plant, including the installation of additional kilns and other equipment. Land was recently purchased at this same place by the Lawrence company for a new cement mill, and plans for this project will soon mature. It is estimated to cost more than \$1,000,000 with machinery.

The Joint School Board of Lower Frederick Township, Perkiomen Township and Schwenkville Borough, Schwenkville, Pa., Samuel Wolford, Spring Mount, Pa., president, will soon take bids for a combination one-story vocational and high school at Schwenkville, to cost about \$115,000. Clayton J. Lapley, Parkside Building, Harrisburg, Pa., is architect.

The Lehigh Portland Cement Co., Allentown, Pa., has plans for an addition to its branch mill at Mason City, Iowa, to cost \$200,000 with equipment, including improvements in the present plant. Building construction will be carried out by the Industrial Engineering Co., Kansas City Life Building, Kansas City, Mo.

The Struthers-Wells Co., Warren, Pa., manufacturer of welded and riveted steel plate, has opened a Philadelphia office at room 807, Liberty Trust Building, Broad and Arch Streets, in charge of W. L. Delaney.

Pittsburgh

PITTSBURGH, Nov. 29.

THERE has been some falling off in demand for machine tools which is attributed to the usual year-end slowing up. The year to date, however, compares favorably with the same period in 1925 and the records of several firms show a monetary value of sales for the first 11 months equal to or in excess of that for all of last year. The Pennsylvania Railroad has issued a list of 10 tools for its Altoona shops; other inquiries call for only one or two items each.

The Union Screw & Mfg. Co., manufacturer of screw machine products, cap and set screws, milled nuts, studs, etc., has removed from 420 Neptune Avenue, Pittsburgh, to a new two-story building at 207-19 South Main Street. The new plant will provide a floor area of 15,000 sq. ft. as compared with 6250 sq. ft. formerly, and with additional equipment production will be increased about 25 per cent. All machines are motor driven.

Contract has been let by the Hubbard Co., Butler Street, Pittsburgh, manufacturer of shovels and other iron and steel specialties, to the Austin Co., for a one-story addition to cost approximately \$135,000 with equipment.

The Red Stone Coal Co., a subsidiary of the Weirton Steel Co., Weirton, W. Va., is arranging for the opening, within 90 days, of mining properties at Riverside Sta-

tion, Pa., on the Monongahela River, and will install power equipment and mining machinery.

Power equipment, conveying machinery and other mechanical equipment will be installed in the one and two-story addition to be erected at the plant of the Stoecklein Brothers Baking Co., 7027 Spencer Avenue, Pittsburgh, to cost close to \$100,000. The McCormick Co., 129 South Negley Avenue, is architect and engineer.

In connection with an addition to its plant, the Guarantee Liquid Measure Co., Rochester, Pa., manufacturer of gasoline pumps, etc., is planning the installation of an electric traveling crane and other equipment.

The Board of Education, Meadville, Pa., is said to be planning the installation of manual training equipment in a proposed two-story and basement school, estimated to cost about \$175,000, for which bids will be asked early in January. The W. G. Eckles Co., Lawrence Savings & Trust Building, New Castle, Pa., is architect.

South Atlantic States

BALTIMORE, NOV. 29.

PLANs are being arranged by the Consolidated Gas, Electric Light & Power Co., Lexington Building, Baltimore, for a two-story addition to its power house at 1050 North Front Street, to cost about \$70,000. The company is planning for a new bond issue to total about \$7,000,000, and preferred stock issue of \$2,000,000, a portion of the proceeds to be used for extensions and improvements.

The Hecht Co., Baltimore and Pine Streets, Baltimore, manufacturer of furniture, has plans for a five-story addition to cost close to \$90,000. Smith & May, Calvert Building, are architects.

The Whitman-Douglas Co., East Washington Street, Greensboro, N. C., plumbing equipment and supplies, has leased a three-story building in course of construction for a new storage and distributing plant. A mechanical shop will be installed. The plant is estimated to cost \$50,000.

The Virginia Electric & Power Co., Richmond, Va., will proceed with the construction of an addition to its steam-operated electric power plant at Norfolk, Va., to increase the capacity by 45,000 hp. It is estimated to cost in excess of \$500,000. Extensions will also be made in transmission lines. The company is operated by the Engineers' Public Service Co., an interest of Stone & Webster, Inc., Boston.

The Board of Town Commissioners, Mount Airy, N. C., is asking bids until Dec. 14 for equipment for extensions and improvements in the municipal waterworks, including a motor-driven centrifugal pump and accessories, steel water tank and tower, etc. The Gilbert C. White Co., Durham, N. C., is engineer.

The Accomac County Board of Education, Accomac, Va., is reported to be planning the installation of manual training equipment in connection with the proposed rebuilding of the high school at Parksley, Va., recently destroyed by fire, with loss of about \$90,000.

The Hoboken Land & Development Co., P. O. Box 101, Hoboken, Ga., contemplates the purchase of an isolated electric lighting plant for rural service.

The Rome Standard Stove & Range Co., Rome, Ga., has completed the construction of a new foundry and assembling plant, with a rated capacity of 200 stoves per day. Initial production will be devoted to cook stoves, hot blast heaters and ranges. Reuben Towers is president of the company, which was recently organized, and M. S. Lanier, vice-president.

The J. Frank Darling Co., Inc., 253 Thirty-sixth Street, Brooklyn, manufacturer of flooring specialties, wooden plugs and kindred products, is completing plans for a main five-story factory, 125 x 152 ft.; two-story finishing building, 20 x 125 ft.; two-story oven building, 125 x 230 ft., and other structures at Wilmington, Del., to cost in excess of \$450,000 with machinery. A site has been secured at Bush and Christiana Streets. Monks & Johnson, 99 Chauncey Street, Boston, are architects.

The Gulf Refining Co., Baltimore, has plans for a new oil storage and distributing plant at Salisbury, Md., to cost close to \$100,000 with equipment.

The Georgia Southern Power Co., Atlanta, Ga., has acquired the plant and property of the Putnam Mills & Power Co., operating at Eatonton, Ga., and vicinity. Plans are under way for expansion, including transmission line construction.

W. F. Martin, 119 Garlington Street, Greenville, S. C., and associates are said to have authorized the construction of the first unit of a new veneer mill in the vicinity of Camp Sevier, to cost in excess of \$25,000 with machinery.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has been inquiring for a 10-ton steel guy derrick, 75 to 90-ft. boom, with electric hoist; also for two Scotch marine type boilers, about 75-hp. capacity.

The Leggett Lumber Co., Tarboro, N. C., is planning to ask bids during December for tools and other equipment, to replace that recently damaged by fire.

The Southern Power Co., Dublin, Ga., is said to be planning extensions and improvements in its power properties at Midville, Ga., recently acquired, including additional equipment.

The North Carolina Public Service Co., Greensboro, N. C., has disposed of a new preferred stock issue to total about \$864,000, a portion of the proceeds to be used for extensions and improvements.

The Virginia Can Co., Albemarle Avenue and Third Street, S. E., Roanoke, Va., is reported considering the establishment of a new branch plant at Buchanan, Va., for the manufacture of corrugated paper as well as solid fiber containers. It is purposed to use an existing building. E. S. Marshall is general manager.

Cincinnati

CINCINNATI, NOV. 29.

MACHINE tool sales increased somewhat the past week, and revised estimates of bookings during November show a decline of only 10 to 15 per cent compared with those in October. The decrease is regarded merely as the usual seasonal development at the end of the year. While heavy buying of equipment by automobile manufacturers has fallen off considerably, purchases by companies in the general industrial field have contributed generously to the total business taken by local builders in the past month. Sales have been well distributed throughout all parts of the country, the only district taking less than its normal proportion of tools being the East. Inquiries are surprisingly good for this time of the year. Local machine tool manufacturers anticipate a lull in buying during December, but see no reason why the present favorable conditions from the standpoint of both sales and production should not carry over into 1927.

The Norfolk & Western is reported to have closed for a few machines and to be ready to purchase the remainder of the tools on its list the coming week. The Illinois Steel Co. now is contracting for equipment on which bids were taken some time ago. The Georgia Railroad, Atlanta, has bought a 36-44 sidehead boring mill, and the Grand Trunk Railroad has purchased a No. 4 carwheel lathe. The McClintic-Marshall Co., Pittsburgh, has placed a 60-in. rotary planer with the Niles-Bement-Pond Co. The New York Central is the buyer of a 16-ft. pneumatic flanging clamp. A local company has closed for a 6-in. vertical shaper.

The Southwestern Portland Cement Co., Osborn, near Dayton, Ohio, has preliminary plans for an addition to its local mill, to increase the present output about 25 per cent, estimated to cost close to \$500,000 with machinery. Headquarters of the company are at Los Angeles; Carl Leonardt is president.

C. C. Reimer, 1445 Maple Avenue, Hamilton, Ohio, architect and engineer, has plans nearing completion for a one-story and basement automobile service, repair and garage building at Cincinnati, to cost approximately \$125,000 with equipment.

Herbert Weller, 37 North St. Clair Street, Dayton, Ohio, has filed plans for a one-story welding shop at 213 East Second Street.

In connection with its new shops at Paducah, Ky., work on which is in progress, the Illinois Central Railroad Co., Chicago, has authorized the construction of a two-story power plant, 150 x 240 ft., to cost in excess of \$150,000 with equipment. Contract for superstructure has been let to Joseph E. Nelson & Sons, 35 South Dearborn Street, Chicago.

The White Star Coal Co., Pineville, Ky., is considering rebuilding the portion of its power plant and tippie destroyed by fire Nov. 23, with loss reported at \$75,000 including machinery.

The John Van Range Co., Fifth Street and Broadway, Cincinnati, manufacturer of kitchen equipment and other metal goods, has awarded a general contract to the Arnold

Co., 565 West Washington Boulevard, Chicago, for its one-story plant 280 x 440 ft., to cost close to \$400,000 with equipment. Samuel Hannaford & Sons, Dixie Terminal Building, Cincinnati, are architects.

The Electric Public Service Co., Findlay, Ohio, operating other electric power properties in Oklahoma and Colorado, has arranged for an additional bond issue of \$1,000,000, a portion of the fund to be used for extensions and improvements. R. A. Pratt is president.

The Nicholson Clay Products Co., Cambridge, Ohio, manufacturer of drain tile, etc., recently acquired by new interests headed by Robert Shaw, Jr., Port Washington, Ohio, is considering plans for enlargements, including about 10 new kilns and the installation of additional equipment.

The Yardley Screen & Weatherstrip Co., 715 Gustavus Lane, Columbus, Ohio, has awarded a general contract to George H. Moor, 36 West Gay Street, for its one-story and basement plant, 100 x 320 ft., to cost close to \$70,000 with machinery. Snyder & Babbitt, 16 East Broad Street, are architects.

The Ashland Brass Foundry, Ashland, Ohio, has been purchased by a group of men composed of J. H. Firestone, O. D. Firestone, J. B. Firestone, Samuel Miller and E. M. Armstrong and plans for expansion now are under way. The buyers are the principal owners of the Ashland Malleable Foundry Co. Mr. Armstrong is manager.

The Daniel Plow Co., Springfield, Ohio, has been incorporated to manufacture a motor plow invented by E. H. Daniel. Production will be started soon in a plant on Erie Avenue.

Chicago

CHICAGO, Nov. 29.

FRESH inquiry for machine tools is light, but dealers are well engaged in following up, with some success, quotations which were made earlier in the fall. On the whole, sales in November have been fair and while not equalling those in October, were ahead of the corresponding period last year. The railroads are inquiring for miscellaneous tools not listed earlier in the year. The Burlington will buy a combination grinder and buffer equipped with a 440-volt, 3-phase, 60-cycle motor. Construction work at the Paducah shops of the Illinois Central is behind schedule and orders for machine tools are still being held up and it is reported that some orders for wood-working tools may be canceled. Probably the most active districts in this territory are Moline, Rock Island and Davenport. A central Illinois electric meter manufacturer has purchased a 16-in. shaper. The A. O. Smith Corporation, Milwaukee, is still making purchases.

The Atlas Forging Co., 1501 South Fifty-fifth Court, Cicero, Ill., recently suffered an \$80,000 loss by fire.

The Keokuk Steel Casting Co., Keokuk, Iowa, is making plant extensions and improvements which will cost \$65,000 with equipment. The monthly melt will be increased from 150 tons to not less than 200 tons.

The King Pneumatic Tool Co., 1737 Armitage Avenue, Chicago, will build a one-story brick factory, 90 x 108 ft., to cost \$35,000. H. E. Gallup, 646 North Michigan Avenue, is architect.

Superstructure is under way on a five-story addition to the plant of the Barber-Colman Co., River and Loomis Streets, Rockford, Ill., manufacturer of dies, reamers, taps, etc., estimated to cost \$200,000 with equipment.

The Faries Mfg. Co., Decatur, Ill., manufacturer of electrical fixtures and equipment, has awarded a general contract to Walter Ware, 908 West Packard Street, for a one-story addition, 40 x 100 ft., to cost about \$25,000. Aschauer & Waggoner, Citizens' Bank Building, are architects.

The Ketler & Elliott Co., 3121 South California Avenue, Chicago, manufacturer of mechanical equipment, has plans for a one and two-story machine shop, 60 x 62 ft., and 20 x 40 ft., respectively, to cost about \$25,000.

The Union Light, Heat & Power Co., Fargo, N. D., has plans under way for extensions and improvements in its steam-operated electric generating plant, to include the installation of two steam-turbo units, each 2500-kw. capacity, boilers, pumps and auxiliary equipment, estimated to cost \$275,000. A. S. King is chief engineer.

The R. W. Sheets Paper Box Co., 1008 Mulberg Street, Rockford, Ill., has plans under way for an addition to cost

close to \$100,000 with equipment. It is expected to begin work in the spring. R. W. Sheets is general manager.

The J. J. Harrington Co., 38 South Dearborn Street, Chicago, manufacturer of mechanical equipment, has asked bids on a general contract for a new one-story plant, 125 x 230 ft., estimated to cost \$90,000 with equipment. W. Gibbons Uffendell, 39 South State Street, is architect.

The Common Council, Richmond, Ill., plans the installation of pumping equipment in connection with proposed extensions in the municipal waterworks. The Wells Engineering Co., Geneva, Ill., is engineer.

The Standard Oil Co., 910 South Michigan Avenue, Chicago, is said to be planning the construction of a new two-story storage and distributing plant at Galesburg, Ill., to cost about \$100,000 with equipment. It is expected to begin work in the spring. W. H. Caldwell is local manager.

Detroit

DETROIT, Nov. 29.

BIDS will soon be asked by Dodge Brothers, Inc., Detroit, for a one-story machine shop addition, 200 x 1600 ft., to cost in excess of \$250,000. Smith, Hinchman & Grylls, Marquette Building, are architects.

The Marmon-Detroit Co., 2927 Woodward Avenue, Detroit, local representative for the Marmon automobile, is completing plans for a two-story service, repair and garage building, 136 x 200 ft., to cost approximately \$200,000 with equipment. P. R. Pereira, Polk Directory Building, is architect. A. M. Colville is general manager.

Super Tools, Inc., recently organized with a capital of 350,000 shares of stock, no par value, by M. Dombroski, 106 Elm Street, Wyandotte, Mich., and associates, has leased a temporary plant at Bay City, Mich., for the establishment of new works. Initial production will be given to a patented pipe wrench. The Bay City Chamber of Commerce has information regarding the project.

The Long Piston Corporation, Detroit, has arranged for the removal of its plant from 6335 Palmer Avenue to 1318 Maple Avenue, where increased production facilities will be provided. E. C. Long is president, and F. G. White, treasurer.

The Lake Superior District Power Co., Ironwood, Mich., has arranged for a new bond issue of \$3,500,000, a portion of the proceeds to be used for extensions and improvements. The company is affiliated with the Middle West Utilities Co., 72 West Adams Street, Chicago. L. E. Myers is president.

The Richards-Oakland Motor Car Co., General Motors Building, Detroit, representative for the Oakland automobile, has plans for a five-story and basement service, repair and garage building to cost about \$175,000 with equipment. Albert Kahn, Inc., Marquette Building, is architect and engineer.

The Buhl Aviation Co., Marysville, Mich., affiliated with the Buhl Stamping Co., Scotten Street and the Michigan Central Railroad, Detroit, is establishing a new local aircraft plant and expects to begin production in December, with employment of about 125 men. The company has leased the Marysville works of the Illinois Tool Co. Lawrence D. Buhl, president Buhl Stamping Co., will act in like capacity for the aircraft organization; H. P. Smith, general manager of the first noted company, will be vice-president; Herbert Hughes is general manager.

The Michigan Water Power Co., Ada, Mich., has work under way on the second of two hydroelectric generating plants on the Thorn Apple River, near Ada, and purposes to have the unit ready for service in about 90 days. The two plants will represent an investment of close to \$1,000,000. Transmission lines will be built.

The Goldsmith-Ely Co., 148 South Jackson Street, Jackson, Mich., operating an electric battery works, has plans for a new one-story and basement factory, 55 x 108 ft., to cost about \$40,000 with equipment. J. R. Graf, Rogers Building, is architect.

The Marvel Carburetor Co., Flint, Mich., has taken out a permit for a one-story addition to cost about \$20,000 with equipment.

The Acme Motor Truck Co., Cadillac, Mich., has acquired the plant and business of the United Motor Products Co., Grand Rapids, Mich., manufacturer of United motor trucks. The new owner will continue the United line of production.

The Melling Forging Co., Lansing, Mich., is in the market for high-speed loose pulley oilers.

The Wickes Boiler Co., Saginaw, Mich., on Jan. 1, will remove its Detroit offices from the Penobscot Building to the General Motors Building.

Cleveland

CLEVELAND, NOV. 30.

MACHINE tool business continues light with orders limited almost entirely to single machines. Reports generally indicate a falling off in sales in November as compared with October. Some business is pending in Detroit in fair-sized lots, but automobile manufacturers appear to have held up buying until their business picks up. The Niles Tool Works has taken an order for a 6-ft. boring and turning machine and a 36-42-in. side-head milling machine from an Ohio gas engine manufacturer. The Cleveland Planer Co., during the week sold a 48-in. planer to a Rockford, Ill., drilling machine manufacturer and a 36-in. planer to a Chicago shop.

The Barnes Mfg. Co., Mansfield, Ohio, has placed contract with the Boldt Construction Co., Cleveland, for a two-story addition, 60 x 200 ft., and a foundry, 100 x 100 ft.

The Cleveland Railway Co., Cleveland, is completing plans for a one-story 100 x 175-ft. repair shop on West 117th Street. David Morrow, 4500 Euclid Building, Cleveland, is the architect.

The France Stone Co., Bloomville, Ohio, has placed a general contract for a stone crusher plant with the Gage Construction Co., Tiffin, Ohio. N. R. France, Second National Bank Building, Toledo, is the president.

The Lamson & Sessions Co., Cleveland, manufacturer of bolts and nuts, will erect a one-story building, 45 x 90 ft. at its Kent, Ohio, plant, to be used for a pickling department.

The India Tire & Rubber Co., Akron, Ohio, has placed contract with the W. A. Franklin & Sons Co., Akron, for factory alterations and additions.

It is reported that an oil refinery, storage plants and eight storage tanks will be erected and docks equipped with handling equipment in Toledo, Ohio, by interests affiliated with the Roxana Petroleum Corporation of Delaware. C. M. Southard, South Avenue, Toledo, is manager of the Toledo office.

The plant and equipment of the Cleveland Brass & Copper Mills, Inc., Euclid, Ohio, has been sold at auction by the United States Government to the Elyria Belting & Machinery Co., Elyria, Ohio, for \$154,400. The sale was made to satisfy a claim for money advanced when the company was engaged in the manufacture of war materials. The plant has not been operated for several years.

The name of the R. & L. Baker Co., 2180 West Twenty-fifth Street, Cleveland, has been changed to the Baker-Raulang Co. The company makes industrial locomotives, storage battery tractors and electric and elevating trucks.

The Blaw-Clawson Co., Hamilton, Ohio, maker of paper mill machinery, has purchased the Shartle Brothers Machine Co., Middletown, Ohio, maker of the same class of products.

Indiana

INDIANAPOLIS, NOV. 29.

PLANs are being considered by the H. & P. Electric Co., Bloomington, Ind., for a new two-story and basement factory, 50 x 150 ft., to cost about \$25,000.

The Ball Brothers Co., Muncie, Ind., has acquired property adjoining its strawboard mills at Noblesville, Ind., and plans the early construction of an addition to cost close to \$500,000 with equipment. An extension will also be built to the pulp mill and additional equipment installed.

The Indian Refining Co., Lawrenceville, Ind., has asked bids on a general contract for its new oil storage and distributing plant, 50 x 125 ft., at Indianapolis, to cost \$65,000. The work will include a power house, 60 x 60 ft., with two watertube boiler units, pumping machinery and auxiliary apparatus. Col. J. H. Graham is president.

The Pride Brothers Co., 102 South Third Street, Evansville, Ind., automobile dealer, is considering the erection of a three-story service, repair and garage building, to cost close to \$90,000 with equipment.

The Weymann American Body Co., Indianapolis, recently organized, has taken over the local plant of National Motor Car Co., which has not been in service for some time. The new owner will remodel the factory and will soon begin the installation of machinery for the manufacture of custom automobile bodies. B. W. Twyman is president of the new company; H. Steinburg is vice-president, and W. H. Colvin, treasurer.

The Edmunds Electric Co., Fort Wayne, Ind., manufacturer of electrical equipment, has awarded a general

contract to the Indiana Engineering & Construction Co., Central Building, for its two-story and basement factory, 40 x 120 ft., to cost approximately \$35,000.

The Board of Education, New Albany, Ind., is considering the installation of manual training equipment in its proposed two-story and basement high school, to cost \$300,000, for which superstructure will soon begin. W. C. Findt, High School Building, Springfield, Ohio, is architect.

Robert H. Hassler, Inc., 1409-1535 Naomi Street, Indianapolis, manufacturer of automobile stabilizers and shock absorbers, has been reorganized under the name of the Hassler Mfg. Co. Guy Lemmon, formerly vice-president, has been made president, and Arthur B. Shaft, vice-president and treasurer. J. E. Casey will be sales manager and Charles Christie factory superintendent. Mr. Lemmon and a group of New York and Chicago bankers bought the Hassler interests Nov. 1.

The Wayne Tank & Pump Co., 733 Canal Street, Fort Wayne, Ind., has changed its name to the Wayne Co. It manufactures gasoline, oil and self-measuring pumps, oil reclaiming and storage systems, gasoline and oil tanks, heat treating furnaces and air, gas, oil, water and welded tanks.

The Jones, MacNeill & Camp Co., Warsaw, Ind., manufacturer of electric drills, has changed its name to the Power King Drill Co. and soon will begin the manufacture of hardware specialties. Theodore C. Frazer is president and general manager.

Gulf States

BIRMINGHAM, NOV. 29.

THE Texas Power & Light Co., Dallas, Tex., has arranged for a bond issue of \$16,000,000, a portion of the proceeds to be used for extensions and betterments in power plants and system, and the acquisition of additional properties. The company is operated by the Electric Bond & Share Co., 71 Broadway, New York. A. S. Grenier is vice-president.

The Morgan Utilities, Inc., A. O. U. W. Building, Little Rock, Ark., is said to be planning the construction of a new ice-manufacturing plant at Midland, Tex., to cost approximately \$175,000 with machinery.

The Fort Worth & Denver Railroad Co., Denver, Colo., is completing plans for its new repair shops at Childress, Tex., to cost close to \$100,000 with equipment. R. C. Gowdy is chief engineer.

The Seymour Cotton Oil Co., Seymour, Tex., is considering rebuilding the portion of its mill destroyed by fire, Nov. 17, with loss reported at \$40,000 including equipment.

The Larco Refinery Co., Winnfield, La., is said to have tentative plans for a new oil refinery at Taney, La., to cost in excess of \$100,000 with machinery. A housing development for employees will also be built.

The Board of Public Works, Plant City, Fla., is asking bids until Dec. 15 for equipment for extensions in the municipal waterworks, including three pumping units and accessories, one 300,000-gal. capacity elevated steel tank and tower, and auxiliary apparatus. The Bishop Engineering Co., Plant City, is engineer.

The Humble Oil & Refining Co., Houston, Tex., is completing plans for the construction of a new pipe line from the Panhandle oilfields to its terminals at Texas City and Baytown, Tex., with pumping stations and auxiliary equipment to provide for an output of 30,000 bbls. per day. It is estimated to cost close to \$9,000,000. The company is also planning for a new oil refinery in the vicinity of Amarillo, Tex., where site has been selected on the Burnett lease, to cost in excess of \$5,000,000 with equipment.

The Badger Ice Co., Oklahoma City, Okla., has plans for a new ice-manufacturing and refrigerating plant at Amarillo, Tex., with initial capacity of about 150 tons per day. The machinery will be electrically-operated. The plant is estimated to cost approximately \$300,000 with equipment.

The Florida Power Corporation, St. Petersburg, Fla., has been organized to take over and consolidate the Pinellas County Power Co., Central Florida Power Co., and the West Florida Power Co., and will consolidate the plants and system. The new organization is arranging an appropriation of about \$3,000,000 for expansion and will extend the transmission lines to Georgia, where connection will be made with an affiliated company. The Florida corporation will be operated under the direction of A. E. Fitkin & Co., 165 Broadway, New York.

The Lion Oil & Refining Co., Eldorado, Ark., has plans under way for a new refinery at Amarillo, Tex., to cost in excess of \$750,000 with machinery.

The East Texas Public Service Co., Pittsburg, Tex., has completed plans for a new one-story ice-manufacturing

plant, 65 x 120 ft., to cost about \$70,000 with machinery.

The American Fertilizer & Chemical Works, Inc., San Saba, Tex., is having plans drawn for a new four-story plant for the manufacture of commercial fertilizers, agricultural lime and kindred products, to cost close to \$150,000 with machinery.

S. S. Goffin, proprietor the Nassau Sound Packing Co., 2724 Main Street, Jacksonville, Fla., is in the market for a complete outfit of machinery to crush oyster shells, including a dryer and machinery to wash shells before crushing.

Milwaukee

MILWAUKEE, Nov. 29.

WHILE the seasonal slackening of automotive production has been a factor in creating a lull in machine-tool business, new orders for production equipment are encouraging, and inquiry is again taking an upward curve. Most of the large factories are taking advantage of the situation by placing orders now for tools that will be required when production schedules again move up. Employment reports, while indicating a decline in the number at work, show that there is no surplus in the metal-working trades in Wisconsin.

The Milwaukee Central Board of Purchases, City Hall, is taking new bids until Dec. 8 for furnishing and installing a 325-ton hydraulic tire press in the new Municipal Service Building. The low bid under the original call was \$2,125, made by the E. L. Essley Machinery Co., Milwaukee.

The Elkhart Sand & Gravel Co., Elkhart Lake, Wis., has awarded the general contract for the construction and equipment of a new washed sand and gravel plant with a daily capacity of 25 carloads, to the Bakstad Machinery Co., Elkhart, Ind. It will be a belt conveyor type and the estimated cost is \$75,000. Peter Kramer is general superintendent.

The Grafton, Wis., Board of Education has engaged M. Tullgren & Sons, Inc., architects, 9 Waverly Place, Milwaukee, to design a high school with vocational training departments, costing about \$100,000. Bids are to be taken after Jan. 1. Harry Sohms is secretary of the board.

The Koehring Co., 3100 Concordia Avenue, Milwaukee, manufacturer of concrete mixers, paving outfits, hoists, etc., has placed the general contract with H. Schmitt & Son, Inc., 14 Burleigh Street, local, for an addition, 60 x 75 ft.

George W. Browne, Inc., 144-148 Broadway, Milwaukee, distributor of Chrysler automobiles, has broken ground for its new sales, service and maintenance building, three stories, 100 x 120 ft. About 7500 sq. ft. will be used as a machine shop, requiring a considerable list of miscellaneous equipment.

St. Louis

ST. LOUIS, Nov. 29.

CONTRACT has been let by the Chevrolet Motor Co., General Motors Building, Detroit, to the Gamble Construction Co., 620 Chestnut Street, St. Louis, for its proposed one-story service and parts factory branch at St. Louis, estimated to cost \$150,000 with equipment. Albert Kahn, Inc., Marquette Building, Detroit, is architect and engineer. Charles Barth is general manager.

The Holmboe Co., 422 West Second Street, Oklahoma City, Okla., has plans for a one-story shop, 70 x 100 ft., at 813 North Harvey Street.

The Arkansas Light & Power Co., Pine Bluff, Ark., has acquired the municipal electric light and water plant at Batesville, Ark., and plans extensions and improvements in this section.

The William Wurdack Electric Mfg. Co., 21 South Eleventh Street, St. Louis, manufacturer of cables, conduits, switchboard apparatus, etc., has awarded a general contract to the Kremer-Virol Construction Co., Century Building, for a one and two-story plant, to cost about \$75,000 with equipment. Klipstein & Rathman, Security Trust Building, are architects.

The Allen Filter Service Co., Karbach Building, Omaha, Neb., Louis Margolin, president, has plans for a new two-story and basement ice-manufacturing plant, to cost \$75,000 with equipment.

The City Council, Chaffee, Mo., is planning to ask bids early in January for pumping machinery and auxiliary equipment for a municipal water system. C. E. Smith & Co., Railway Exchange Building, St. Louis, are engineers.

The W. A. Ross Construction Co., Railway Exchange Building, St. Louis, will take bids for the erection of a one-

story concrete-mixing plant near Summitt Street, 60 x 240 ft., to cost about \$65,000 with machinery. Madorie & Bihr, Continental Building, are architects. A machine shop will be built at the same location.

The B. P. Lientz Oil Furnace Co., 3409 East Eighteenth Street, Kansas City, Mo., has filed plans for a new one and two-story plant, 50 x 115 ft.

The American Steel Works, 2844 Southwest Boulevard, Kansas City, Mo., will soon ask bids on separate contracts for its one-story and basement steel fabricating plant, 60 x 130 ft.

At a special election, citizens at Crete, Neb., have approved a proposition for a municipal electric light and power plant, for which plans will be drawn soon.

The Tevely Dairy Co., 1001 South Grand Avenue, St. Louis, is contemplating the erection of a new refrigerating plant to cost \$200,000. Leonard Haeger, 3844 Utah Place, St. Louis, is architect.

The Oklahoma Steel Castings Co., Tulsa, Okla., has let contract for an additional unit, 60 x 66 ft., to its plant to house the core department. This is the second new unit to be built within the last six months to take care of the company's business in refined electric steel castings. Additional equipment is also being purchased, including core ovens from the Swartwout Co. and a complete sand mill equipment from the National Engineering Co.

Pacific Coast

SAN FRANCISCO, Nov. 24.

THE Western Power Corporation, San Francisco, operating the Great Western Power Co., San Francisco; San Joaquin Light & Power Corporation, Fresno, Cal., and other light and power properties, is disposing of a bond issue of \$10,000,000, a portion of the fund to be used for extensions and improvements. F. L. Dame is chairman of the board.

The Madary Planing Mill Co., Santa Clara and H Streets, Fresno, Cal., is planning to rebuild the portion of its plant recently destroyed by fire, with loss in excess of \$150,000 including machinery.

The Bowie Switch Co., Wells Fargo Building, San Francisco, has plans under way for a two-story machine shop to cost about \$30,000 with equipment.

The Barton Packing Co., Seattle, plans the installation of cold storage and refrigerating equipment in the proposed addition to its plant to cost about \$500,000 with machinery.

The Pacific Coast Coal Co., care of William Aitken, Lyon Building, Seattle, architect, is completing plans for a new mechanical plant at its coal properties at Black Diamond, near Renton, Wash., to include a machine shop and power house. The entire project will cost in excess of \$90,000 with equipment. N. D. Moore is vice-president.

The Union Pacific Railroad Co., Union Pacific Building, Omaha, Neb., has asked bids for a new engine house and shops at Ogden, Utah.

The Magna Copper Co., Superior, Ariz., is planning to rebuild the portion of its electric power substation, destroyed by fire Nov. 14, with loss reported in excess of \$150,000 including equipment.

The Howard Motor Co., Los Angeles, is having plans drawn by the Austin Co., for a two-story service, repair and garage building at Pasadena, Cal., L-shaped, 70 x 200 ft., to cost about \$115,000 with equipment.

The Board of Education, Los Angeles, is considering the installation of a manual training shop in the proposed new junior high school in the Eagle Rock district to cost about \$325,000 with equipment. Carleton M. Winslow, Van Nuys Building, is architect.

The Pacific States Cast Iron Pipe & Foundry Co., Iron-ton, Utah, has begun operations in a portion of its new foundry, now being completed, and will continue on a curtailed basis until the entire plant is ready for operation, when maximum production will be arranged.

The United States Reclamation Service, Denver, Colo., is said to have preliminary plans for a new pumping plant in connection with its Okanogan irrigation project at Wenatchee, Wash., to cost about \$100,000 with equipment.

Actual construction of the new \$2,000,000 Los Angeles-Long Beach plant of the Ford Motor Co., Detroit, will begin within the next thirty days. A call for bids on piling and foundations has been made by Albert Kahn, Detroit, architect.

The Standard Boiler & Steel Works, 226 Queirolo Street, Los Angeles, is contemplating the erection of a steel frame factory in the Vernon industrial district. It will represent an investment of approximately \$45,000.

The General Motors Corporation, Detroit, has purchased a large tract on the west basin at San Pedro Harbor, Cal.,

and, it is reported, contemplates the erection of an assembly plant.

Farr Electric Service, Inc., 228 West South Temple, Salt Lake City, Utah, has been appointed representative for the Electric Controller & Mfg. Co., Cleveland.

The Emsco Derrick & Equipment Co., Los Angeles, which is a merger of the Emsco Tool Co. and the Emsco Steel Products Co., has awarded contract to the Union Iron Works for an addition to its machine shop to cost about \$20,000. E. W. Smith is president of the Emsco company.

The American Cast Iron Pipe Co. has removed its Los Angeles office from 412 West Sixth Street, to 1111 Detwiler Building. J. E. Swenson is Pacific Coast sales manager for the company with headquarters at the above address.

Ovens, power equipment, conveying and other machinery will be installed in the new smelting plant to be constructed by the California Mining & Smelting Co., San Diego, Cal., on site near Ramona.

Canada

TORONTO, Nov. 29.

MACHINE tools sales have shown general improvement the past week or two. In addition to a scattered demand for single tools which totals large, the Canadian National Railways placed an order for about 20 machines for its new shops under construction at Toronto, and it is understood that other tools on this account are still to be purchased, including one plain radial drill and a 300-ton hydraulic axle straightening machine.

Inquiries of from one to a half dozen tools have also appeared, several of which are expected to turn into orders early in the new year. A good sized list is looked for in connection with a proposed \$1,000,000 addition to the plant of the Canada Iron Foundries at Three Rivers, Que. Several large contracts have been placed during the week for pulp and paper mill equipment.

According to C. R. Brown, of the Canadian Drawn Steel Co., Hamilton, Ont., that company will start at once the erection of a \$10,000 addition to its plant.

The Dominion Power & Transmission Co., Hamilton, Ont., is having plans prepared for a new substation in the west end of the city, to be ready for operation next spring. It will be a combination railroad and power substation, and with equipment will cost \$100,000.

Rapid progress is being made in connection with an addition to the boiler house for the Canadian Sugar Refining Co., 511 St. Catharine Street, Montreal, which with equipment will represent an expenditure of \$100,000.

N. Slater & Co., Sydney Street, Hamilton, Ont., manufacturers of hardware specialties, etc., will build an addition to their plant to cost \$20,000. Mitchell & Riddell, 46 Head Street, are general contractors.

The Standard Paper Box Co., 6240 Park Avenue, Montreal, will build an addition to its factory to cost \$20,000.

The Foundation Co. of Canada, Ltd., 746 Sherbrooke Street, Montreal, has the general contract for the construction of a complete drum barker and wood-handling plant to cost \$500,000 for the Port Alfred Pulp & Paper Co., Port Alfred, Que.

Western Canada

The British Columbia Sugar Refinery Co. will build a \$15,000 addition to its refinery on Powell Street, Vancouver, B. C. The Dominion Construction Co., 509 Richards Street, has been awarded the general contract.

P. W. Graham, 1031 Fifth Avenue, Moose Jaw, Sask., has the general contract for \$20,000 addition to a power plant for Moose Jaw.

The Winnipeg Packers, 347 Dupui Street, St. Boniface, Man., will build an addition to their plant next spring at a cost of \$175,000.

The Sidney Rubber Roofing & Paper Co., Victoria, B. C., has started work on an addition to its plant to cost \$100,000.

Foreign

BIDS will soon be asked by the Municipal Council, Quito, Ecuador, for the construction of a municipal hydroelectric light and power plant, with initial capacity of about 3000 hp. The American Consulate, Guayaquil, Ecuador, Harold D. Clum, consul.

The United States Quartermaster, San Juan, Porto Rico, is asking bids until Dec. 21 for pumping equipment and

auxiliary machinery for a proposed fresh water supply system.

The Minister of Public Works, Buenos Aires, Argentina, is considering a requisition for new electric traveling cranes on docks Nos. 1, 2 and 3, estimated to cost close to \$1,000,000. Information at the office of the Bureau of Foreign and Domestic Commerce, Washington, reserved information Argentina No. 44750. The American Consulate, Buenos Aires, Henry A. Bates, assistant trade commissioner, also has data regarding the project.

The Department of Public Works, Madrid, Spain, has authorized a fund of 5,500,000 pesetas (about \$835,000) for immediate irrigation projects, including the installation of power equipment, pumping machinery, etc. A description is available at the office of the Bureau of Foreign and Domestic Commerce, Washington, reference Spain 44281. The American Consulate, Madrid, Charles H. Cunningham, commercial attaché, also has data.

The Dansk-Islandsk Analfsselskab A-S, Copenhagen, Denmark, has secured a concession for hydroelectric power development at Arnarfjord, Iceland, and purposes to use four waterfalls for an installation of about 40,000 hp. capacity. The power will be used for the operation of proposed plants, to be constructed in the same district, for the manufacture of nitric acid by the arc process.

The Government of France, Department of Works, Paris, has authorized the installation of mechanical equipment for the handling of cereals in bulk at the Port of Marseilles, including conveying elevators, cranes for handling materials in sacks, motor conveyors, belt conveyors leading to new silos, aerial bridge with two belt conveyors with capacity of 200 tons per hr., each, and miscellaneous equipment.

The Dublin Corporation, Dublin, Ireland, is considering plans for an addition to its Pigeon electric generating station and the installation of considerable equipment, estimated to cost \$500,000. It will also construct new transmission lines and substations to cost more than \$1,000,000.

NEW TRADE PUBLICATIONS

Foundry Equipment.—The Foundry Equipment Co., 1831 Columbus Road, N. W., Cleveland. Coleman oven catalog "F," consisting of 64 pages devoted exclusively to core and mold oven equipment. The book contains a discussion of the various kinds of fuels used for core and mold oven operation, and various types of ovens are discussed primarily from the standpoint of adaptability to various classes of work. The book also includes a discussion of dry sand mold practice. All illustrations show installations in foundries under actual working conditions.

Graders.—Rome Mfg. Co., Rome, N. Y. Leaflet describing the company's high lift road grader, built in eight sizes ranging from a 6 to a 12 ft. blade.

Gratings and Treads.—Grating Co. of America, Pittsburgh; distributed by Joseph T. Ryerson & Son, Inc., 203 Westside Avenue, Jersey City. Leaflet briefly describing the company's Tri-Lok gratings and treads for use in subways, sidewalks, marine floors, architectural floors, industrial plants, etc.

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Air Compressors.—Sullivan Machinery Co., 122 South Michigan Avenue, Chicago. Bulletin 83-E dealing with the company's portable air compressors, operated by electric motors. The machines are available in 103-ft. and 206-ft. sizes.

Motors.—Century Electric Co., 1806 Pine Street, St. Louis. Illustrated leaflet describing the company's repulsion-start induction single-phase electric motor.

Engine Lubrication Instruction.—Climax Engineering Co., Clinton, Iowa. Booklet dealing with the proper lubrication of heavy-duty, medium speed industrial engines. Full particulars for oiling are given with illustrations and diagrams. Points stressed are the use of oil of a high quality and the correct grade to meet operating conditions, as well as the correct use of this oil to insure delivery to bearing surfaces in proper amounts at all times.

Portable Lift-Trucks.—Revolator Co., Jersey City, N. J. Bulletin 90A, four pages, covers the hand power model Revolator with revolvable base. Illustrations of the machine and methods of using are given.

Roller Bearings.—Hyatt Roller Bearing Co., Newark, N. J. Bulletin No. 1560 of data for engineers and draftsmen covering applications of roller bearings. Aside from the conventional load and rating tables, the bulletin includes formulas for determining bearing sizes for specific applications, suggestions for mountings—with drawings—photographs of diversified equipment, and construction details.

Chain Blocks.—Herbert Morris, Inc., Buffalo. Two folders describe the uses of Morris chain blocks and adjustable slings with diagrams.

Safety Switches.—Crouse-Hinds Co., Syracuse, N. Y. Bulletin 2093 illustrates plug receptacle and safety switch conduits. Folder 43 gives types and prices.

Industrial Traction.—General Electric Co., Schenectady. Copiously illustrated 6-page booklet outlines the advantages of electric trucks, electric locomotives for haulage, and the electric tractor in cutting down handling costs.

Coiling Machines.—Sleeper & Hartley, Inc., Worcester, Mass. Bulletin 101, describing the company's universal wire spring coiling machines, offered in 11 different sizes and adapted to coil cold, oil-tempered wire from 0.004 in. to $\frac{1}{2}$ in. diameter. Both the segment type and clutch type of machine are described, the names referring to the method of driving and feed control.

Sheet Metal Working Machinery.—Niagara Machine & Tool Works, 637-697 Northland Avenue, Buffalo. Small booklet containing brief descriptions, illustrations and specifications of the company's presses, punches, squaring shears, rotary shears, hand or power machines and tools for the sheet metal shop. Only one of each different group of machines manufactured by the company is included.

Relief Valves.—Kainer & Co., 761-763 Mather Street, Chicago. Brief folder devoted to a description of the company's pressure reducing and relief valve, designed to maintain a uniform pressure of 10 lb. per sq. in. on water systems.

Forging Machinery.—National Machinery Co., Tiffin, Ohio. No. 59 of the company's forging machine talks which deals with the making of automobile socket wrenches on the forging machine.

Flush Valves.—Bridgeport Brass Co., Bridgeport, Conn. Illustrated circular describing the various types of flush valves for toilet fixtures manufactured by the company.

Ball Bearings.—New Departure Mfg. Co., Bristol, Conn. "Cutting Your Costs," a brief bulletin devoted to a discussion of the cost and comparative advantages of equipping electric motors with ball bearings. Considerable data, based upon actual demonstrations, are offered.

Pneumatic Painting Equipment.—Willard C. Beach Air Brush Co., Harrison, N. J. Loose leaf booklet, describing, largely by illustrations, the company's various types of air brushes and paint and finishing room equipment.

Power Transmitting Equipment.—Dodge Mfg. Corporation, Mishawaka, Ind. Bound volume of 307 pages with many illustrations and charts, providing detailed descriptions and specifications of the various sorts of power transmitting equipment manufactured by the company. Some of the principal items listed are bearings, blocks, bushings, shafting, rope drives, rings, pulleys, casings, clamps, gears of all sorts, couplings, hangers, material handling equipment, etc. The book is broadly indexed.

Reversible Electric Fittings.—V. V. Fittings Co., 710 West Jackson Boulevard, Chicago. Folder illustrating four types of reversible fittings to take the place of nine units under the previous design.

THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

"When a thrifty continental housewife enters her corner grocery to buy a package of raisins, she does not burst forth with her national anthem and insist upon a product bearing some favorite national colors."

Thus speaks Dr. Julius Klein, director of the United States Bureau of Foreign and Domestic Commerce.



His recent visit to the Old World convinced him that American exporters need not lose any sleep over the so-called "anti-American" feeling. Mark Twain's comment on the reports of his death apply.

Our own investigation into the buying habits of Eskimos, Egyptians, Moros, and Mesopotamians has convinced us that the Scotch peculiarity of trying to get the most for the money is universal.

When patriotism and pocketbook clash the first commonly comes in second.

I have struggled valiantly to digest the bumper crop of comments on the five-day week Henry Ford's action has produced. The reasoning of neither the pros nor the cons is wholly convincing.

For instance, M. C. Rorty, the economist, says that while he suspects the five-day week will come in time, he regards as economically unsound the idea that it will solve the problem of balancing consumption and productive capacity.

"... any action, such as an excessive shortening of working hours, which reduces the total of production, will just to that same extent reduce the total of consumption," he states as an economic law.

A law should work as well in reverse gear as it does in "forward," which would mean that an increase in production by lengthening working hours would increase consumption. This may be true, but it does not take into account public preference. If Dame Fashion decrees abbreviated garments and frowns on cotton, even an 80-hr. week would hardly help the cotton goods manufacturer.

A friend of mine says that, if he goes stale on his present job, he will try for a connection with a modern metal-working plant. A visit to one arouses the same desire that follows an inspection of the new high school with its laboratories, gymnasium hall and assembly room—a wish that he might try it all over again.

We have airy, well lighted and well appointed shops, orderly and cleanly within and well kept with flowers and lawns without. There is the lunch room, the recreation field and the employees' club house.

All these are the product of the welfare movement, which seized industry some years ago and brought about some labor eruptions in its wake. Where unusual facilities and surroundings are now enjoyed, it appears to be the result of a mutual understanding that charity is not given nor asked. Management came to realize that paternalism did not go. Labor has come to understand that the cost of the improvements when distributed over all employees is a small unit sum.

A. H. D.



